UPDATE COMPARATIVE LEGAL STUDY

by

Chris Clarke

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Chris Clarke
58 Park Avenue North
London N8 7RT

Tel: +44 (20) 8348 5589
Fax: +44 (20) 8341 1256
email: acf.clarke@virgin.net

PREFACE

This study provides an update to a much larger project conducted for the European Commission by the law firm, McKenna & Co (now Cameron McKenna), London, in 1995-96. The McKenna study examined the legal position in a total of 19 countries (the 15 EU Member States, plus the US, Iceland, Norway and Switzerland), using specialist lawyers in each country to cover each case. The countries were divided into two groups, with Study 1 examining 9 Member States, plus the US, and Study 2 reporting on the rest. The material was presented under some 30 headings, although Study 2 had a somewhat smaller brief. Despite being entitled "Study of Civil Liability Systems for Remedying Environmental Damage", the McKenna project decided during the course of its work that restricting the scope to civil liability alone – in the sense of liability under private law – would not provide a true picture of environmental liability in the countries studied, since in many of them civil liability was insignificant compared with liability under the administrative and criminal law systems. That study therefore included material on administrative and criminal liability, as well as civil law rules.

The present study is also in two parts: the first part reviews the main developments in this field in selected EU Member States, since the McKenna research ended (ie, 1996 onwards) – this is reported in section 2; the second part gives a brief outline of key liability rules in five non-EU OECD countries (the USA, Canada, Australia, Japan and Switzerland) – this is given in section 3. Alongside these two, an attempt is made in section 1 (Overview), to draw together some trends and conclusions on certain aspects that have featured in the EU debate.

Apart from a different remit, the present study differs from the McKenna project in several other respects. First, it is on a much smaller scale. Second, because of that, its scope has been limited to a smaller number of countries and to the main, headline developments in each. Third, in order to counteract those limitations, an attempt has been made to explore, if only anecdotally, how the different liability systems have been working on the ground, rather than merely what appears in the statutory texts. Fourth, greater attention has been given to the public, administrative law aspects of national regimes. Fifth, the present study has been carried out by a public policy specialist, rather than by lawyers. As a result, a conscious attempt has been made to simplify some elements of legal terminology, in order to draw more intelligible parallels between jurisdictions and between different liability systems. Legal experts may feel that this has gone too far in certain respects, oversimplifying or misrepresenting important matters of legal analysis; on the other hand, the general reader may wish that it had been made simpler still.

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EXECUTIVE SUMMARY

This report is divided into three sections. The first section (Overview) reviews recent trends within EU Member States and other OECD countries, and attempts to clarify the existing position at national level on several aspects of the proposals contained in the Commission's White Paper. The second section (EU Member States) outlines some recent developments in nine Member States: Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden and the UK, and includes a shorter note on Belgium. The third section (OECD Countries) summarises some of the liability rules and associated conditions in five, non-EU OECD countries: the USA, Canada, Australia, Japan and Switzerland.

Overview

Environmental liability has a long history in national law. Over the last 20-30 years, most governments have sought to refine liability rules as an instrument of public policy to deal with harm resulting from environmental incidents. The basic idea of a European Community instrument on environmental liability is therefore in line with developments at national level. There have also been precedents for such a proposal within the EC institutions since at least the early 1980s.

Since 1995, there have been several new initiatives in this field within the EU Member States, many addressing contaminated land. The trend overall is one of tightening liability standards and clean-up obligations, qualified by increasing attention to details designed to protect certain parties and to improve the regimes' efficiency. Most countries include strict liability for environmental damage and increasing amounts of property damage, some liability for historic damage, limited defences, growing attention to biodiversity damage and a shift towards use-based clean-up objectives, together with attempts to encourage voluntary solutions and avoid unnecessary legal action.

Complex bodies of law now exist at national level, with three important implications for an EC initiative:

- there is a bedrock of Member State law on which an EC directive can be based;
- a directive would have to work alongside Member State laws which go beyond its provisions in some respects and which may need explicit protection under Article 176 of the EC Treaty; and
- implementation of a directive is likely to present boundary problems within Member States, where the EC and national rules overlap and conflict.

Although many of the proposals in the White Paper reflect positions which are common at national level, there are potentially important differences, including:

- the White Paper's emphasis on a civil liability approach, where many of the national rules are based on public law, and
- the proposal to cover both "traditional damage" (personal injury and property damage) and "environmental damage" (contaminated sites and biodiversity damage) within a single instrument, where national law normally addresses these separately, with differing liability rules.

If a directive were to have such a broad scope, there might be a need for more differentiation in the rules applying to different fields of activity or damage, or different types of legal procedure. The White Paper suggested leaving it to the Member States to decide the appropriate balance between public and private law, but such discretion would not of itself be enough to resolve some important differences between them.

The civil law principles used as a model for the White Paper proposals differ markedly from commonly accepted public law rules for dealing with contaminated sites and, to a lesser extent, biodiversity damage. A directive intended to apply in both fields might need to say more about how public law rules would fit within its requirements, including those areas where public law regimes are tougher on defendants (no restriction to dangerous activities, fewer defences, wider lists of liable parties, no limitation periods, etc). Some means, such as wider access to justice, might also be needed to address the fear that a public law approach could lead to under-enforcement of liability rules, a key reason why some countries have instituted strict liability under civil law to supplement public law obligations.

Eight general themes are identified from experience within Member States or the OECD as a whole:

(1) strict liability is firmly established as the basis for all new legislation – fault-based liability is confined to an increasingly narrow, but nonetheless important, area concerning traditional damage;
(2) the details matter;
(3) environmental damage is largely addressed by public (administrative) law, rather than private (civil) law, mechanisms;
(4) judicial discretion, unwritten law and general legal principles play an important part in most regimes;
(5) at present, the largest cost burden in this field arises in response to contaminated land;
(6) liability for biodiversity damage remains the least developed aspect, although many countries have begun to take steps to deal with it;
(7) there is a growing amount of litigation and voluntary action on property damage, but personal injury litigation and compensation remains relatively rare, even where strict liability has been introduced; and
(8) there has been a decisive move away from absolute clean-up standards for contaminated land, in favour of more flexible goals linked to future site use.

On specific aspects of the White Paper proposals, there has been no major change at national level in the boundary between strict and fault-based liability, except insofar as the existing trend towards greater reliance on strict liability has continued. Overall, public/administrative law regimes mostly rely on strict liability, whereas private/civil law mechanisms contain a mixture of strict and fault liability. In the case of civil law, countries remain divided between those which have adopted strict liability legislation in various forms and those which have not. Even where no such legislation has been passed, civil law generally includes substantial, and growing, elements of strict liability under traditional rules. There has also been little change in the types of activity covered by strict liability. In some countries, strict liability under civil law is confined to dangerous activities of various kinds; in others, it is wider. Public law regimes tend to apply irrespective of the nature of the activity, apart from some exemptions for private homeownership. There has been some change in the types of damage covered by strict liability, inasmuch as biodiversity damage is

increasingly being addressed under that standard and a new area of debate has been emerging on the definition of harm in relation to contamination by genetically modified (GM) substances. On the whole, the division between countries applying strict liability and those retaining fault-based liability, for personal injury claims, has remained unchanged in recent years. Outside the EU, the expansive liability rules in Japan for personal injury caused by air pollution can be seen as either an anomaly or a sign of things to come.

The rules governing application of strict liability to historic damage vary considerably from country to country. Most have provisions imposing some form of liability for damage originating in the past. Under public law, many countries have strict liability rules for clean-up of environmental damage regardless of its date of origin, but some have adopted a cut-off date before which some kind of fault has to be shown. In many cases, historic damage has been addressed through market transactions and financial assistance is sometimes available where remedial action promises to stimulate economic regeneration. New strict civil liability laws usually apply only to events occurring after their entry into force, whereas older civil law rules, including some strict liability standards, do not distinguish temporally in this way, except that certain defences carry more weight for historic events. Potential problems arise both in relation to events which "straddle" a cut-off date and where countries have national cut-off dates which would be earlier than any new threshold set by an EC directive.

Under national law, the definition of the liable party is generally wider than that proposed in the White Paper (the person in control at the time of the original release into the environment). The trend is towards increasing qualification and refinement of two basic categories:

- the causer of the harm and
- the site owner or occupier (holder, possessor, etc).

Refinement has meant expanding these categories in some respects, but also excluding certain parties thought to merit protection. Some regimes make causers liable ahead of owners and occupiers; others make them equally liable. Even the definition of the causer is generally wider than the White Paper formulation, encompassing omission and permission, as well as positive action, and often including site owners and occupiers, as causers in their own right, for failure to prevent or remove harm. Grounds for also imposing liability for mere ownership or occupation include custodial responsibility and financial gain from either the pollution or the clean-up. Some public law regimes separate ultimate liability from a clean-up obligation on the site owner/occupier, although that distinction may be academic if cost recovery proves impossible under civil law. Owners are increasingly given protection under innocent owner/innocent purchaser defences, although these require high levels of precautionary behaviour. Some regimes extend the liability net wider to include other parties, such as waste producers and past owners or occupiers, or even secondary parties, such as parent companies, shareholders, directors and officers, receivers and lenders, with boundaries set for these exposures by defining behaviour which will not incur liability.

The rules for apportioning liability in multiple party cases are often contentious. The most common rule is joint and several liability qualified by encouragement of division on equitable grounds (amount of responsibility for causing the harm, degree of co-operation, etc). This is the dominant principle under civil law. A minority of jurisdictions have attempted to institute proportionate liability as the basic rule under public law, usually

backed up by equal sharing where there is not enough information to determine relative shares. This has not proved widely popular among policymakers for several reasons. Without relinquishing joint and several liability, some regimes include larger elements of proportionate sharing by, for example, limiting minor contributors to a proportionate share, prohibiting allocation of all liability to a single party or including more prescriptive rules for equitable apportionment. Other key issues concern: the handling of orphan shares; the criteria and mechanisms for determining shares; how best to encourage settlements; whether to help certain parties recover from other liable parties; and the comparative merits of detailed or simple apportionment rules.

The defences and exemptions available under different regimes are difficult to pin down, because of factors such as judicial discretion, the allowance of defences not mentioned in statutory texts and increasingly complex conditions attached to newer defences. There has been no major change in the basic pattern, except that selective defences have increasingly been introduced. There are important differences between public and civil law regimes, with much fewer defences normally allowed under public law. Almost all civil law regimes allow certain basic defences, such as act of God, act of war, etc, but these are interpreted narrowly and afford little protection. Many allow defences in terms of the intervention of a Third Party or the victim, but these too are narrowly applied. Some regimes allow a defence of tolerable levels in local circumstances, although not for personal injury nor for more serious property damage; elsewhere, a general test of "significance" of harm may offer similar protection in cases of environmental damage or property damage. Broader defences in terms of available knowledge (eg, state-of-the-art/development risk, foreseeability, etc) or standards of care (eg, due diligence, best practicable means) are not generally allowed under the new civil law statutes nor under most public law regimes, except as mitigating factors. Some of them are often available, however, under traditional civil law rules, including those with a strict liability standard. Compliance with a permit is not normally a defence under civil law; it offers limited protection under public law rules, although often only for specified releases and consequences. It may, however, be important as a mitigating factor. There are important differences between countries on the liability of permitting authorities. A compulsory order of a public authority is often allowed as a defence, although it is not often specified. Recent years have seen the introduction of selective defences and exemptions for parties such as secured creditors and minor contributors; these too are tightly defined, to avoid giving such groups a blank cheque. More generally, governments frequently offer support or protection to parties deemed worthy of protection, especially in circumstances where other public policy goals are at stake.

Judicial discretion also plays an important part in the application of rules governing the burden of proof and the test of causation. The burden of proving fault, where that is still required, is increasingly alleviated, through tougher duties of care on defendants; it remains important nevertheless in personal injury and some property damage cases in some jurisdictions. The burden of proving causation varies significantly from country to country. Some are alleviating it through various forms of rebuttable presumption based on *prima facie* evidence; others are not. As far as causation itself is concerned, there are long-standing technical differences between countries on issues such as remoteness, and some significant questions are being raised in case law about issues such as multiple causes and defendants' duty to take adequate precautionary action. In some regimes, it may not be necessary to prove causation at all, or at least not in a detailed sense. On the other hand, it is important to recognise that, even where the burden of proving it is alleviated, there is no automatic presumption of causation. *Prima facie* evidence is needed, the science is often immature and

all systems leave room for a conclusion that the cause remains unknown or elusive and for judicial discretion to deal with circumstances where alleviation would produce anomalous or inequitable results. There are also wide differences between countries on the rules for discovery of evidence.

A few other trends and developments are highlighted. Contaminated land continues to receive a high priority in most industrialised countries, under regimes combining strict liability and encouragement of voluntary action, with particular attention being given to redevelopment of brownfield sites. Many countries are developing their own standards for specific pollutants, while also contributing to international co-ordinating initiatives. Use-based clean-up objectives are now generally accepted. Liability for biodiversity damage seems to be receiving increasing attention, although up to now long-standing public law powers of intervention appear to have been little used.

There are wide variations in the liability standards for personal injury, from countries which retain a negligence standard to others which have adopted strict liability for some or all activities causing harm. Those differences do not seem to have had much effect on the incidence or success of personal injury claims, although it may be too soon to assess the result of newer strict liability provisions. The crucial factor restraining personal injury claims appears to be the difficulty of proving causation, less because of the burden of proof than as a result of the lack of adequate scientific evidence. In contrast, it appears to be getting easier to win civil claims for property damage, in the context of increasing application of strict liability and tightening public law regimes on contaminated land.

Most jurisdictions do not normally bind recipients of civil compensation awards to spend the money in specified ways, but some awards or settlements take the form of restitution in kind and, in any case, where environmental damage is involved, the claimant may increasingly be subject to separate public law requirements to repair the harm. National environmental liability regimes are not generally predicated upon compulsory financial security. Some include security requirements for specific types of activity, such as underground storage tanks or extra-high-risk installations, which have sometimes proved difficult to implement. Governments have not withheld liability regimes simply because the risks have been difficult to insure, nor is there evidence of such regimes failing because many risks are uninsured. The involvement of public law regimes poses an important question concerning the class of insurance that may be triggered by a loss, with US court rulings placing some doubt on the view of many European insurers that responses to an order from a public authority are not covered under liability policies. Hybrid insurance products, which combine liability and property cover, may prove important in the long run. Insurance market trends worldwide indicate that insurance products in this field will always contain limits of indemnity, as well as complex exclusions and conditions. Other forms of financial security are already being used to meet statutory requirements and may play an important role in the future.

EU Member States

Denmark: The main legislative development in this field in Denmark since 1995 is the adoption in 1999 of the Contaminated Soil Act (370/99), a public/administrative law intended to strengthen the authorities' powers to order liable parties to clean up polluted sites. This will supplement the strict civil liability provisions of the 1994 Environmental Damage Compensation Act. The 1999 Act is a broad instrument covering many aspects of

contaminated land (identification of sites, restrictions on use, investigation, remediation, etc). It does not seem to cover biodiversity/eco-system damage, although that might be drawn in under a concept of harm to the "general environment". There is no restriction to dangerous activities, the only activity excluded being agricultural spreading.

The liability standard is strict, but not retroactive. The liable party is the "polluter" defined as either the operator of the offending plant when contamination occurred or any other party who caused the harm through reckless conduct or conduct subject to stricter liability under other legislation. Defences include: war, civil unrest, natural disaster, etc; fire or criminal damage where the polluter is not at fault or subject to stricter liability elsewhere; innocent ownership/purchase; and a minor contributor exemption. Apportionment is based on proportionate sharing, or equal shares where the authorities are not able to assess the parties' respective contributions. Orders can also be served on a single party in certain circumstances, with that party given a statutory right to seek contribution from other liable parties. A broader system of appeals is established. Separate rules are included for domestic heating oil tanks smaller than 6,000 litres, where the tank owner is liable for contamination discovered after 1 March 2000 and insurance must be taken out up to a limit of DKK 2 million (euro 267,913). Oil companies are now paying the premiums for this insurance on behalf of their customers.

Early experience with the 1994 (civil) Act suggests that there has been little litigation among private parties, especially for personal injury, but the authorities have used it extensively as a threat to convince liable parties to undertake voluntary clean-ups, pending implementation of the 1999 Act powers at the beginning of 2001. Industry representatives seem to be less concerned about its effects than they were when the Act was adopted, but some environmental groups feel that the law is too narrow to give adequate protection.

Finland: The biggest change in Finland is the adoption of a new Environmental Protection Act (86/2000), in force from 1 March 2000, Chapter 12 of which introduces a new public law regime for contaminated soil and groundwater. The liability standard is strict and joint and several, with no defences specified in the text. Its scope is not restricted to dangerous activities, but in principle it applies only to events after entry into force, although there is some doubt about that. There is a hierarchy of liable parties, starting with the causer of the contamination, passing to the site holder, subject to certain conditions, then ending with the local authority if neither of the first two carries out the work. The Act extends access to justice to environmental groups for certain aspects of the regime, in line with wider trends under Finnish environmental law. A series of broad definitions of harm and general principles, duties and prohibitions in the Act are defined in ways that may override operating permits and draw in biodiversity damage.

Early experience with the Environmental Damage Compensation Act (737/1994), which introduced strict, civil liability, on an all-damage basis, suggests that its scope will be interpreted widely by the courts. There have not, however, been many personal injury claims, nor any significant disruption to industry, nor any claims for damage to habitats or eco-systems. The Environmental Damage Insurance Act (81/1998) came into effect at the beginning of 1999, creating a compensation fund, administered by commercial insurers and financed from compulsory insurance premiums from companies subject to environmental operating permits, to underwrite orphaned liabilities under the 1994 Act. There have so far been no claims against the fund. A wide-ranging, national contaminated land programme, begun in the 1980s, has continued, with work progressing on updated soil quality guidelines.

France: There have been no major legislative changes in this field in France since 1995, but considerable work has taken place on the national contaminated site programme launched in 1993, case law has developed around this and several working groups have been examining aspects of the programme. Of the legislation that has been passed, an Environmental Code, adopted on 18 September 2000, left the liability position substantially unchanged; a new law on mining damage, passed in March 1999, applies rules akin to the contaminated site regime to mining problems; and a more general tax on polluting activities (TGAP), introduced in 1999, will finance remediation work by the national environment agency (ADEME) at orphan sites. The general contaminated site work continues to be based on the 1976 classified installations law (76-663) and the 1975 waste law (75-633), both administrative laws with a strict liability standard, which have been supplemented by a 1992 law (92-646), aspects of the Barnier law of 1995 (95-101) and several subsequent decrees. Among other things, the Barnier law brought a widening of access to justice for environmental groups, with rights to action in both civil and administrative courts if public authorities fail to respond to a request for enforcement action. The fact that the underlying legislation was not specifically designed for contaminated land initiatives has resulted in anomalies and ambiguities in case law. Consideration has been given to new legislation, but the current preference seems to be for adaptation of the existing framework rather than its replacement.

Case law has thrown up numerous developments, including: liability on unauthorised, as well as authorised, operators, despite no formal provision for this under the 1976 law; dispute about the boundaries for site owner liability where the responsible operator is insolvent; similar uncertainty about the position in bankruptcy proceedings and in relation to redevelopment of derelict sites; routine inclusion of biodiversity damage in remediation orders and inclusion of eco-systems among the core receptors in the national risk assessment procedure; a growing number of cases under civil law, mostly against site owners, often on a strict liability basis, with courts taking a strong view of precautionary responsibilities; and signs of significant alleviation of the plaintiff's burden of proving both fault and causation. Uncertainty about owner liability has been an important focus of attention, including apparently inconsistent senior court judgments and much comment in the Hugon-Lubek report (April 2000) from the most prominent working group on this field. The contaminated site programme has nevertheless succeeded in concentrating minds in the property market, with the result that no major transaction now takes place without consideration of this risk and that case law is developing on contractual liabilities. A new national approach to risk assessment is being developed, including clean-up standards and specifically French guideline values and thresholds.

Germany: The main development in Germany since 1995 is the adoption in March 1998 of the Federal Soil Protection Act (BSG). This provides uniform national rules for soil protection and clean-up of contaminated sites, where before this was largely regulated at state level. It is a public law measure, based on strict liability, covering harm to land and associated damage to ground- and surface waters. It applies to all activities, irrespective of their inherent danger. Liability falls on the causer of harm, his successor and current or past owners or occupiers. This extends the previous rules by clarifying successor liability and drawing in past owners and occupiers, subject to certain conditions. Apportionment involves joint and several liability in the form of a right of compensation or contribution from other liable parties. There are few defences; only innocent ownership (for past, but not current, owners) and general principles of proportionality and discretion. The remedial objective may also be reduced where harm is not foreseen because of permit compliance and

good faith is worthy of protection. Together with an Ordinance of July 1999 (BSV), national contamination standards have been set for different pathways, beginning with 12 substances, although the states retain some discretion to adopt their own regulations. Alongside the legislative change, Germany has continued to develop its long-standing programme of identifying and registering contaminated sites, and a new system for risk assessment was launched in February 1998.

Experience over the last ten years with strict civil liability under the 1990 Environmental Liability Act (UHG) suggests that there has not been a dramatic change in the legal climate. There seems to have been relatively little litigation: some property damage claims, which have largely been settled in the context of new environmental insurance covers, but few personal injury actions. A compulsory insurance requirement has still not been implemented. German insurers have, however, successfully transferred most of the affected policyholders to new environmental impairment liability policies developed in response to the Act, which seem to be responding well to the incidents that arise. Where cases fall outside the scope of the various strict liability statutes and are subject to fault-based liability under the Civil Code (BGB), the burden of proving fault seems to be easing significantly, as courts impose tight standards of care on defendants.

Italy: The main change in Italy since 1995 has been the introduction in December 1999 of a public law regime on contaminated sites, under the 1997 Ronchi Decree (or Waste Management Act) (22/97). This involves a strict liability obligation on the causer of harm to land, surface or groundwater, to make the site safe, clean up pollutants and restore the environment. The remedial objective is full reinstatement, but other, less stringent responses are allowed where that is not possible at an affordable price. Site owners bear the liability if the causer can not be made to pay, with the authorities imposing a first charge on the land if they are forced to carry out the work themselves. Apportionment is subject to traditional rules involving joint and several liability among multiple owners and either joint and several or proportionate liability among multiple causers. The law lays the foundations for limit values based on site uses and for other guidelines. The background includes a programme of identifying contaminated begun in 1989 and regional clean-up laws in several Italian regions, also based on strict liability. There remains disagreement among experts on the application of the Ronchi Decree rules to contamination which pre-dates the law's entry into force on 16 December 1999; it will probably be subject to more flexible (voluntary clean-up) rules, provided it has been declared by a January 2001 deadline.

Italy now has three overlapping regimes which can be used to address environmental damage, with differing provisions, allowing a choice of courses of legal action in some cases. A 1982 waste law also holds waste producers liable for damage even if it results from the actions of an independent disposal operator to whom wastes have been lawfully transferred, although the Ronchi Decree may offer protection for events after its entry into force. On the traditional damage side, there seem to be few personal injury cases, but there are signs that the burden of proving fault under civil law is being alleviated, although not the burden of proving causation.

The Netherlands: There has been no new primary legislation in this field in the Netherlands since 1995, but there has been a major change in a key element of the Dutch liability system: soil remediation policy. After many years of renown as the country which set the demanding goal of "multifunctionality" (clean-up to a standard suitable for any future site use), a switch was announced in June 1997 to "function-oriented and cost-effective remediation". Concern

had been mounting for some years about a lack of progress in the clean-up programme; impracticable objectives were leading to uncertainty and anomalous decisions, support for voluntary clean-up was crumbling and little use was being made of state financing schemes. This logjam was seen to be obstructing economic development and allowing the pollution legacy for future generations to get worse. The new strategy is intended to: focus on mobile pollution, leaving more stationary pollution in the ground; increase the resources available from both public and private sectors; reduce the cost and accelerate the pace of clean-up; decentralise policy implementation; and bring legal reforms to protect buyers in transactions, combat corporate evasion and help owners and investors to pursue cost recovery from polluters. The implementation programme was announced in May 1998 and further steps have been taken since then.

Meanwhile, recent experience with the revised Soil Protection Act (WBB), adopted in 1994, includes continuing dispute in the courts about the application of a January 1975 cut-off date for liability for historic damage, which the 1994 legislative reforms were intended to remove, and debate about the implications for apportionment of a prominent Supreme Court judgment in January 1997 (*Moerman v Bakker*). The Environment Ministry seems to be increasingly using administrative order powers, rather than the cost recovery actions it previously favoured, to secure remedial action. Some observers also detect increased use in the Dutch Supreme Court of an alleviated burden of proof on causation. On the other hand, there seem to be few personal injury actions and little legal action on liability for biodiversity damage. The launch in 1998 of an integrated environmental insurance package, combining liability and property cover, is another potentially important development.

Spain: The main legislative development at national level in Spain since 1995 is the adoption in 1998 of the Wastes Law (10/1998), Title V of which deals with contaminated land. The system is administered by the autonomous regional governments. Liability for clean up falls on the causer or, secondly, on owners or possessors of the site. It is strict, joint and several, and retroactive, with no specified defences. Clean-up can take place by voluntary agreement, backed up by severe penalties for non-fulfilment. The national government is preparing a list of potentially contaminating activities, which will be subject to extra reporting obligations, as well as guidelines for soil investigation. The regional authorities have considerable autonomy in this field. Among other things, their laws can go beyond the national provisions. Many are also developing their own soil criteria.

A draft text of a long-mooted civil liability law was published in November 1999, but work on this seems to have been postponed in September 2000. The draft included the following provisions: strict, and joint and several, liability, on causers of harm to persons, property or the environment; application to dangerous activities only; a presumption of causation given evidence of its likelihood, unless full compliance with authorisations; defences of contributory negligence or consent of the victim, state-of-the-art, Third Party intervention and tolerable levels in local circumstances; rejection of permit compliance as a defence; legal standing for environmental and local groups; wider rights of discovery; a financial limit of Pta 15,000 million (euro 90.1 million) per liable party per incident; and limitation periods of three years from discovery and 30 years from causation. Much of this reflects developments in civil case law, which include an increasing presumption of negligence from the mere existence of damage.

Sweden: The main development in Sweden since 1995 is the adoption in 1998 of a new Environmental Code, in force from the beginning of 1999. In addition to consolidating

existing law, this has brought more onerous general rules of consideration, a new system of environmental courts, new powers of regulatory intervention, new environmental sanctions charges and stricter penal sanctions. Civil liability rules are mostly unchanged, but Chapter 10 of the Code has created new administrative liability rules for contaminated sites. The liability is strict and applies to any activity causing relevant harm. It falls, first, on the causer or, secondly, on the site owner, subject to knowledge at the time of acquisition and an exemption for secured creditors who take possession. Innocent owners may have to pay the equivalent of any increase in value as a result of the clean-up. There are other qualifications to liability, including reasonableness, time since the pollution occurred and, in the case of causers, minor contribution. Liability is joint and several, but should be shared according to equitable factors, with *de minimis* contributors limited to a proportionate share. The text explicitly excludes application of any limitation period, but some observers foresee judicial objections to this.

Civil liability rules, in Chapter 32 of the Code, follow the Environmental Damage Act 1986, involving strict, joint and several liability on operators and owners or occupiers (subject to qualification in terms of contributing to the harm), for personal injury, property damage and pure economic loss. The rule on the burden of proof of causation is widely seen as a form of rebuttable presumption. Chapter 33 covers a system of compulsory insurance to pay for orphaned liabilities. The Code also includes a new system for generating environmental quality standards. The Code as a whole may be revised in the next few years, however, with a review programme already under way.

UK: The biggest change since 1995 in the UK is the implementation in April 2000 (in England) of Part IIA of the Environmental Protection Act 1990, a new public law regime for contaminated land. This imposes strict and retroactive liability, first, on those who cause or knowingly permit the harm or, secondly, on site owners or occupiers. There are few defences, a relatively broad definition of biodiversity damage and an unusually detailed apportionment system combining proportionate and joint and several liability, as well as multiple exclusion tests. There is no restriction to dangerous activities. The clean-up objective is based on suitability for future site use, including existing, likely future, possible temporary and any informal recreational uses. There is a new statutory definition of contaminated land, and definitions of significant harm and siginificant possibility of such harm, using a risk-based approach tied to "pollutant linkages" (pollutant-pathway-receptor). The regime is administered mainly by local authorities, except for "special sites" which are passed to the respective national environment agencies. Remediation may be by means of administrative order, voluntary agreement or public action with subsequent cost recovery. The government hopes that much of the work will continue to be done through market processes of land redevelopment.

The definition of causing or knowingly permitting is relatively broad and is likely to draw in some owners or occupiers, as causers/permitters (Class A parties) (with more onerous clean-up requirements), rather than merely as owners/occupiers (Class B parties). Liability is determined, first, by identifying one or more pollutant linkages at a site, then deciding which parties fall into a liability group for each linkage. The lengthy apportionment and exclusion system begins with any members of a Class A group, who are subject to six, hierarchically ordered exclusion tests. These take out parties who are involved because of specified activities (financial assistance, insurance, consigning waste, etc), relationships (eg, previous financial provision for remediation) or physical circumstances (changes to substances, introduction of pathways or receptors, etc). No test may be carried out if the result would

mean no liable party remaining. If there are no Class A parties available, members of a Class B group are subject to a shorter exclusion process. Once exclusions are completed, liability is apportioned among the remaining members of a group according to equitable factors, or equally if there is not enough information, but may include orphan shares from parties who can not be found. A party is also liable for substances which arise from chemical or biological processes affecting the pollutant he originally released.

On the civil law side, there has been substantial case law on various aspects of property damage (much of it subject to strict liability under traditional rules) and signs of growing litigation on personal injury (still subject to fault liability), with the latter showing a relatively low success rate for plaintiffs.

Belgium: The Belgian federal law of 20 January 1999 on the protection of the marine environment is one of few examples specifically addressing biodiversity damage and coastal habitats. It includes a broad definition of the marine environment and has as its objective the safeguarding of its specific character, biodiversity and integrity, through measures to protect it and to repair damage and "environmental disruption". All users of maritime areas are obliged to take account of various principles, including polluter pays, sustainable management and restoration. There are obligations on shipowners and other users to take necessary precautions. The law imposes strict, joint and several liability on the perpetrator of damage or disruption, for remedial measures that are not unreasonably costly. There are defences in terms of: war, terrorism, natural phenomenon, etc; act or omission of a Third Party; and negligence, etc on the part of navigational authorities. The authorities can demand financial security for foreseeable costs once a risk of pollution has been identified. Implementing regulations will give criteria for environmental disruption and valuation of harm. Studies are under way on monetary compensation where damage can not be directly restored, including interviews with the public on willingness to pay, using the contingent valuation method.

OECD Countries

The five countries whose liability systems are reviewed in this section (the USA, Canada, Australia, Japan and Switzerland) are among the EU's main trading partners and competitors. The report gives only summary information on particular aspects of each system, with some attempt to look at how they work in practice. In some cases, the focus is on national rules; in others, regional/local ones. It is not possible to give neat, point-by-point comparisons with the White Paper proposals, because of the diversity and complexity of each country's rules.

There are big differences between the countries, with the USA and Japan in some senses representing two extremes; the first incorporating heavy reliance on legal liability and mandatory obligations with few defences, the second, an emphasis on voluntary co-operation and non-binding official guidance. In reality, the respective positions are more complicated and the gap between them is narrowing. Despite a long list of severe provisions on many aspects of liability, the US still requires proof of fault in personal injury claims, liability for biodiversity damage is largely restricted to government land and actions by public trustees, and the enforcement record is uneven. In addition, US defendants have had significant success in legal actions against liability insurers, releasing considerable sums in insurance cover which may not be available to policyholders in other countries. Conversely, Japanese courts have recognised an exceptionally broad liability standard for personal injury claims in

the wake of high-profile industrial poisoning incidents in the 1950s and 1960s. Any contrast with the US also needs to take account of the unusual weight given in Japan to informal government interventions and business-government co-operation. Nevertheless, it is hard not to conclude that the US environmental liability rules are the most severe in the industrialised world. The other three countries can be said to fall somewhere in between the US and Japan, with the Canadian and Australian rules showing close parallels with practice in the UK and the US, their fellow common law jurisdictions, and Swiss rules generally closer to the civil law traditions.

USA: The USA has many different environmental liability regimes, at both federal and state level, with differing rules for different environmental media and activities. This can cause problems of unpredictable enforcement for the regulated community, but can give the authorities power to choose the severest of several regimes. Overall, environmental damage is handled under statute law, at either federal or state level, containing a mixture of administrative, civil and criminal provisions, whereas traditional damage is mostly subject to common law. The main federal statutes containing liability and clean-up provisions are the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) and the Oil Pollution Act (OPA). These are primarily public laws, but some contain important civil law elements. Despite differences, they contain some common features, including: tough enforcement powers; wide notification and disclosure requirements; exceptionally high administrative and criminal penalties; broad public participation; strict, joint and several liability for a range of substantial response costs; wide definitions of the liable parties; very limited defences; and liability irrespective of when the original releases occurred.

The most famous of these laws is CERCLA or Superfund, passed in 1980, to deal with the highest priority uncontrolled or abandoned hazardous sites, large numbers of which were discovered in the late 1970s-early 1980s. Although many sites have involved releases after CERCLA's entry into force, its primary focus has been upon past damage and there is some doubt about its role in the future. Some observers expect other regulatory programmes, such as RCRA, to cover most similar cases in the years ahead and more sites to be dealt with under state-level, mini-CERCLAs. Nevertheless, there are grounds for thinking that aspects of CERCLA will influence at least some future liability rules.

The CERCLA regime combines a multi-billion dollar Trust Fund, financed by taxes on business, with severe liability rules and obligations. Liability is strict, joint and several, and retroactive, although none of those terms appears in the statute. There is a broad definition of actionable damage, in terms of a release or threatened release of a wide range of hazardous substances, with no minimum concentration threshold. Liability is for short- or long-term response costs consistent with a National Contingency Plan, damages for harm to natural resources (biodiversity) and costs of health assessments. Natural resource damages (NRDs) are limited to resources owned or controlled by government or Indian Tribes, with standing to sue for them restricted to trustees of those entities; NRD liability is in principle not retroactive – although courts have interpreted that narrowly – and is capped at $50 million (euro 56 million) per release or per incident, provided there is no violation or misconduct. CERCLA does not cover personal injury or property damage, although the health studies and information disclosure requirements can help plaintiffs in common law actions. Clean-up standards have been very demanding, at least in principle, and the remediation process is an onerous one, involving numerous procedural steps and powers to

keep the liable parties permanently on risk even after completion, through "re-opener" clauses. There are stringent reporting requirements, subject to fines for non-compliance of up to $25,000 (euro 28,000) per day per violation and up to three years' imprisonment.

There are four categories of potentially responsible party (PRP): current owners and occupiers, past owners and occupiers, hazardous substance (etc) generators and transporters who selected the site. The inclusion of generators (or waste producers) has sharply increased the number of liable parties at some sites. Liability may also extend to individuals, associations, consortia and joint ventures, as well as secondary parties such as successor and parent companies, shareholders, directors and officers, trustees and others, with many courts deciding that the statute overrides normal corporate protections. While the burden of proof is not formally alleviated, causation, in a direct sense, does not always have to be proven. The government can secure response costs either through administrative orders or through cost recovery following action financed from the Trust Fund, with the balance moving decisively to administrative orders ("enforcement first") after the first few years. Many actions are secured by voluntary settlements in advance of an order, but the Act provides a threat of treble damages, in addition to response costs and possible $25,000 per day fines, for non-compliance, and it also prohibits any "pre-enforcement review", or hearing, on liability before completion of the remedial work, which normally takes many years. Three basic defences are so narrowly construed as to be almost worthless, an innocent purchaser defence is also very demanding and a "federally permitted releases" exemption offers exceptionally narrow protection, a long way short of a permit compliance defence. In multiple party cases, courts have routinely ruled that harm at Superfund sites is not divisible, because of mixing of different parties' substances in the ground, but a sophisticated system of settlement has developed, with liability mostly divided according to equitable criteria and the authorities granting protection to settling parties. Orphan shares were commonly assigned to the remaining liable parties, but recent administrative reforms have led to increased use of "mixed funding" with the Trust Fund paying for many of them.

As attempts at legislative reform of CERCLA since the early 1990s have foundered on deep disagreements about the merits of the liability rules, the government has introduced numerous administrative reforms to improve the efficiency of the programme, including protections at brownfield sites, reduced liability for minor contributors, simplified remedy selection and more attention to cost and future use in clean-up objectives. Protection for lenders was also boosted under a law adopted in 1996. On biodiversity damage, only a small number of NRD cases have been brought, but regulations on assessment and valuation have been approved, for both CERCLA and OPA, both making some use of contingent valuation. The burden of proof is on defendants if they wish to dispute such assessments.

Beyond CERCLA, the other major federal statutes (RCRA, CWA and OPA) contain similar liability standards, but narrower definitions of the liable party. OPA, however, allows claims for pure economic loss. Claims for traditional damage have to be brought under common law rules, which involve a mixture of strict and fault liability, but vary from state to state. Strict liability actions for property damage are often settled by large companies, in the knowledge that courts may alleviate the burden of proving causation. Personal injury claims face more difficult obstacles, including proving causation and negligence. On the other hand, US claimants have several advantages over those in other countries, including wide discovery rules, far-reaching information disclosure requirements under statute law, a constitutional right to a jury trial and the possibility of large punitive damages. There is no defence in terms of permit compliance and the definition of harm is relatively broad. Many

US environmental laws contain "citizen suit" provisions allowing individuals or groups to seek injunctive relief or civil penalties from parties in violation of the law. Most of these allow the authorities to pre-empt the citizen suit by intervention of their own.

Canada: Canada's environmental liability rules are mostly set at provincial level. A few federal laws, notably the Canadian Environmental Protection Act (CEPA 1999), include enforcement powers to deal with harm involving activities and areas under federal jurisdiction. These may be extended under the proposed Species at Risk Act (SARA). Federal law contains important information disclosure and access to justice provisions, including a right to bring an Environmental Protection Action in the courts where the authorities have failed to respond. There are also federal initiatives to help co-ordinate provincial approaches to key issues, including the Canadian Council of Ministers of the Environment (CCME), which has produced influential soil quality guidelines.

At provincial level, there has been much attention in recent years on contaminated land regimes, notably in British Columbia (BC) and Ontario. The BC regime, under its Waste Management Act 1996 (WMA) and implementing Contaminated Sites Regulation, combines a severe liability standard with detailed exemptions and protections, and was one of the first to include more flexible site-specific and "matrix" clean-up standards, alongside the national (CCME) soil quality criteria. The main focus is on independent remediation, rather than government-ordered clean-up, with the law designed to help private parties conducting clean-ups recover their costs from the liable parties, by removing some of the obstacles that would exist under common law. The state retains the option of serving an administrative order, if necessary, but so far this has been used sparingly. Parties doing remedial work can choose between four types of clean-up standards, receiving different compliance certificates according to the type they have chosen.

The scope of the regime is very broad. Liability is strict ("absolute" in the text), joint and several, and retroactive. The liable parties are: current owners and operators, past owners and operators, producers and transporters of an offending substance, and any other person designated as responsible. Even secured creditors are listed as potentially liable, although that is heavily qualified. There are the usual narrow defences (act of God, etc), some innocent owner, occupier or operator exemptions and a broad exemption for producers and transporters acting lawfully, as well as more specific exemptions for government bodies, advisers and others. Permit compliance is explicitly excluded as a defence and government bodies and representatives are given immunity. Minor contributors are protected from joint and several liability. The courts are required to consider equitable factors in apportioning liability between multiple defendants and allocation panels of experts can be set up to give a non-binding opinion. Offences under the Act may be subject to fines of up to C$1 million (euro 0.7 million), on a daily basis if the offence continues, and up to C$3 million (euro 2.1 million) for intentional damage.

Laws similar to the BC WMA exist in other provinces, with some important differences. The liability rules in Ontario were sharply tightened in 1990 under an amendment initiative called Bill 220, following public concern at an uncontrolled tyre fire caused by vandalism at an illegal disposal site. Bill 220 expanded the universe of liable parties, extended the reach of public orders for remediation and cost recovery, and widened the risk to lenders. Ontario also has an Environmental Bill of Rights which includes provisions on public participation, access to justice and "whistleblower" protection for employees reporting violations by their

employers. On the other hand, Ontario, like BC, has flexible clean-up standards and is seeking ways to remove obstacles to redevelopment of brownfield sites.

Liability for personal injury and property damage is governed by common law rules in Canada, except in Quebec. Lines of precedent vary between provinces, but all broadly reflect developments in UK law, with property damage claims generally brought under strict liability rules, with some relatively broad defences (foreseeability, etc), and personal injury still subject to a negligence standard, though with an increasingly onerous duty of care. There has been relatively little on liability for biodiversity damage, but the access to justice provisions under both CEPA and the Ontario Bill of Rights allow citizens to bring actions where significant harm to eco-systems is threatened and criminal sanctions seem to take increasing account of such damage.

Australia: Environmental liability is mostly subject to state, rather than federal, law in Australia, but some potential liabilities and response obligations arise under Commonwealth (ie, federal) laws, such as the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the Gene Technology Act 2000 and the recently amended Protection of the Sea (Civil Liability) Act 1981. The first includes a remedial obligation in cases of biodiversity damage, the second, provisions to order remedial action or recover costs in the event of licence breaches or danger to health or the environment, and the third, powers of cost recovery in cases of (actual or threatened) marine oil spills. In addition, a system of National Environmental Protection Measures (NEPMs), which set standards or guidelines on aspects of environment policy, has generated a National Pollutant Inventory giving the public access to emissions data and an NEPM on assessment of site contamination.

Liability rules for contaminated sites come under state law, with the regime in New South Wales (NSW) seen as a leader in this field. The basic NSW law is the Contaminated Land Management Act 1997 (CLM Act), a public law instrument with civil law elements, which has very broad definitions of terms such as "environment" and "contamination". Under this Act, sites that pose a significant risk can be scheduled for investigation or remediation, with the responsibility assigned hierarchically, first, to the causer, then the site owner and then a "notional owner" of the land (mortgagee in possession or other person with a vested interest). Liability is strict, joint and several, and retroactive. No defences are specified, except for protections for secured creditors and others, and non-fulfilment of the requirements of the Act. There is a right of appeal to the specialist NSW Land and Environment Court, but that court can also extend the liability to directors and officers of a corporate body. There are severe penalties for non-compliance, including fines of up to A$66,000 (euro 36,660) per day for a continuing offence.

As a comparison, proposals for a regime in Western Australia (WA), in its Contaminated Sites Bill 2000, are less severe in some respects, but similar in others and contain higher penalties for non-compliance than NSW. The liability of the causer is strict for events after the law's entry into force, but fault-based for previous incidents, with all prior actions assumed to be unlawful unless the responsible party can prove otherwise. The liability of owners is strict for all contamination, unless they make a formal disclosure statement within two year's of the law's entry into force, in which case an exemption may be granted, subject to a demanding innocent ownership test. Mortgagees in possession are liable as owners, unless they transfer possession of all or part of the land to the state within 45 days. The only defences specified are compulsory order, or action, of a public authority, and possession of

an official certificate of contamination audit which failed to identify the problem. Penalties include fines of up to A$500,000 (euro 280,000), or A$100,000 (euro 55,550) per day.

Civil law actions for traditional damage remain subject to common law in Australia, with some differences between the states, but a general resemblance to UK law. Personal injury claims are generally subject to fault-based liability and remain relatively rare despite increasingly stringent duties of care on defendants. Property damage claims are mostly pursued under nuisance, with a trend towards almost automatic liability where harm was foreseeable. Liability for biodiversity damage is currently dealt with under public law, with some private rights of action in certain statutes and such damage included as a factor in determining penal sanctions.

Japan: The environmental liability position in Japan is almost a mirror image of the position in Europe and most other OECD countries, with broad interpretation of liability for personal injury and relatively little strict liability for contaminated sites or other environmental damage. Much of the current position can be traced back to highly publicised mass pollution incidents in the 1950s and 1960s, and a series of civil law actions brought – and ultimately won – by private plaintiffs against both companies and government bodies. The civil law actions resulted in expansive rulings for pollution-related personal injury, including assignment of liability for what is seen elsewhere as diffuse pollution. In response to these incidents, a special session of the Japanese parliament in 1970 introduced tight regulatory controls on certain emissions and strict liability rules for health damage caused by air and water pollution. That was supplemented in 1973 by a collective funding system, financed by levies on polluting plants, which pays compensation to victims or both "pollutant-specific" (eg, Minamata and itai-itai diseases) and "non-pollutant specific" diseases (eg, asthma).

Another important feature of the Japanese system is wide use of non-binding instruments, including voluntary agreements with industry and administrative guidance from statutory bodies, within a regulatory culture which gives considerable weight to such official exhortations. This informal approach can avoid legal costs incurred elsewhere, but can also make it more difficult for other parties to challenge regulatory failures. Since the adoption of new framework legislation (the Basic Environmental Law) in 1993, statutory obligations seem to be playing a greater role. Environmental quality standards have been set for groundwater and soil, strict liability for damage to groundwater has been introduced and remediation powers, joint funding for orphan sites and stiffer penalties (the maximum raised from ¥1 million to ¥100 million (euro 0.9 million)) have been adopted for improper waste disposal. There is still no national law governing liability and clean-up of contaminated land. On the other hand, administrative guidance is issued from time to time, there are numerous voluntary agreements with industry groups and companies, the Water Pollution Control Act has since 1997 allowed local and regional authorities to order preventive or remedial measures by owners or occupiers, and several prefectural or municipal authorities have passed their own ordinances requiring clean-up when contamination is discovered.

Personal injury litigation has continued despite the collective compensation system, with mass lawsuits both on unresolved claims for the pollutant-specific diseases and on non-pollutant specific respiratory diseases allegedly caused by air pollution. Since the late 1970s, civil suits have been brought by hundreds of plaintiffs against industrial companies, highway authorities and the central government, alleging health damage caused by industrial and motor vehicle emissions in urban areas. Although not all claims have been upheld, the courts have ruled in the plaintiffs' favour on many counts, awarding substantial damages to

some claimants, ordering restrictions on road traffic and recognising certain practices, such as heavy road traffic, as unlawful, as well as a nuisance. Private sector defendants have also settled many of these claims at a cost of several billion Yen (tens of millions of euros). These judgments suggest certain general points about Japanese civil law in this field, including: courts are prepared to assign liability to individual companies for damage arising from numerous air emission sources in a local area; multiple defendants can be held jointly and severally liable once their emissions mix in the atmosphere; there may be a presumption of causation if emissions known to be capable of causing health conditions are present in sufficiently high concentrations; other possible contributory factors may not be sufficient to protect the parties from liability; permit compliance is not a defence; and evidence of raised incidence of health disorders can be sufficient to show actionable harm.

Switzerland: Despite its federal constitution, most environmental liability rules in Switzerland are under federal law. Statutory rules derive mostly from various Ordinances based on the Environmental Protection Act 1983 (USG) and the Water Protection Act 1991 (GSchG), both as amended. Most private law is based on the Civil Code (ZGB) and Code of Obligations (OR), which contain a mixture of strict and fault-based liability, although a new strict civil liability covering high-risk installations was added from July 1997 under 1995 amendments to the USG.

The USG is a framework law covering a wide range of environmental conditions. It includes broad definitions of harm and soil pollution, various duties on operators to protect the environment and remedy harm, and a financial security requirement for waste disposal operators. Section 4 of the Act imposes a duty on the cantonal authorities to secure clean-up of harmful sites, with liability for the costs assigned to the polluter, which includes both causers of the harm and holders of the site. The liability is strict, but proportionate to each party's share of responsibility. Primary liability is on the causers and site holders are exempted if they could not have known of the contamination, received no benefit from it and will receive no benefit from its remediation. There is a levy on waste producers and disposal operators, of up to 20% of the average price of waste disposal, to finance a fund to pay for up to 40% of remediation at orphan, and some other, sites. Underlying the whole system, there is a presumption in favour of voluntary action and wider voluntary agreements. Environment groups meeting three criteria, including at least 10 years' existence, are given legal standing in administrative proceedings, at both federal and cantonal level.

Strict civil liability is imposed under the Act on an open list of high-risk enterprises and installations. The liability is on the owner, subject to defences of *force majeure* and gross negligence/exclusive fault of the victim or a Third Party. Public authorities are subject to this regime and there is provision to require certain operators to provide financial security against their liability risks.

1. OVERVIEW

Introduction

Environmental liability is not a new idea. Courts and, to a lesser extent, legislators have been grappling with it in various forms for decades. It has gained momentum in recent years, however, as society has placed more importance on the repairing of pollution and other environmental damage, and on discouraging further harm. As the drive to clean up polluted sites, to address imminent threats of harm and to compensate victims has grown, so has the need to find someone to pay for these things. Whether in commercial transactions, in private lawsuits or in public safety and enforcement measures, the costs involved in responding to environmental incidents have increasingly to be allocated somewhere.

In response, over the last 20-30 years, governments in most industrialised countries have sought, as a conscious act of public policy, to fashion or adapt liability and clean-up rules which are capable of dealing with these problems efficiently. This has included both legislative and regulatory measures, some addressing specific problems such as contaminated land or water pollution, others taking a more general approach. In some respects, new rules and obligations have been introduced, but the reforms have also involved clarifying and re-focusing long-established principles of public and private law, taking on board principles already emerging from case law, which continues to play an important part in this field.

The notion of a European Community instrument on environmental liability is therefore in line with general developments at national level. Even within the EC institutions, there have been proposals for environmental liability rules since at least the early 1980s. Initial drafts of the trans-frontier shipment of hazardous wastes directive (84/631/EEC), for example, contained provisions for liability and insurance, which were deleted from the final text in return for a commitment to act on these issues within three years of the directive coming into force. In October 1989 and June 1991, successive drafts of a proposed directive on civil liability for damage caused by waste were adopted by the European Commission, before attention shifted to a more general approach with the publication in May 1993 of the Green Paper on Remedying Environmental Damage (COM(93) 47 final), the precursor of the White Paper on Environmental Liability from which this study derives. In a different vein, response and clean-up obligations already exist within other EC environmental laws, such as the directives on integrated pollution prevention and control (IPPC) and landfill of waste.

This study, however, is about developments at national level. By 1995, when the previous study was done for the European Commission, most EU Member States and other OECD countries had adopted some legislation on these matters and many were developing further measures. The five-year period since then, 1996-2000, has seen a continuation of that process. Some countries have passed new primary legislation and most have enacted secondary legislation or regulatory changes on one or more aspects of the subject. This period has also seen the first experience with laws approved before 1996, but relatively new at the time of the earlier study. Even today, it is still too soon to judge how these laws will work in the longer run, but a few clues as to their likely effects have become apparent. More generally, there has been a substantial amount of new case law on many issues.

This section of the report attempts to give an overview of trends either in the EU Member States or across the OECD as a whole. It may be useful to begin, however, with some of the headline developments within the EU Member States since 1995.

Headline developments

In terms of new legislation and regulatory initiatives, the main developments have been the following:

- the Federal Soil Protection Act 1998, in Germany
- the implementation from 1 April 2000 of Part IIA of the Environmental Protection Act 1990 (the new contaminated land and liability regime, adopted under the Environment Act 1995), in the UK
- the Contaminated Soil Act (no. 370, 2 June 1999), in Denmark
- the new Environmental Code (adopted July 1998, in force from 1 January 1999), in Sweden
- the new Environmental Protection Act (86/2000) and the Environmental Damage Insurance Act (81/1998), in Finland
- Legislative Decree 22/97 (the Ronchi Decree or Waste Management Act), together with Ministerial Decree 471/99 on remediation of polluted sites, in Italy
- a strategic shift in soil remediation objectives, from "multifunctionality" to "function-oriented and cost-effective remediation", in the Netherlands
- further development of the contaminated site remediation programme, including the Ministerial circular of 10 December 1999, in France
- the new Waste Law (10/1998), drafts of a proposed civil liability law and several regional laws on contaminated sites, in Spain
- the Law on Protection of the Marine Environment 1999, in Belgium

These and some other developments are reviewed in the next section, on EU Member States.

The trend is clear, but not simple

The overall trend is clear but, at the same time, it is far from simple. Virtually all industrialised countries have continued to tighten liability standards and clean-up requirements in the field of environmental pollution. There is no evidence of any slackening in the development of more effective legal and regulatory rules in this area. A few European states have withheld or postponed draft legislation in anticipation of the proposed EC

directive, but even they seem resolved to pursue the underlying objective, one way or another.

At the same time, in the light of initial experience with rules which mostly emerged during the 1980s and early 1990s, the last few years have seen increasing attention to detailed refinement and adjustment of those rules. This has not involved any retreat from the basic strict liability standards. It has focused instead on targetted protections and exemptions for parties whose activities are only marginally connected with the damage, on more effective clean-up strategies and on efficiency improvements in processes such as remedy selection and management of remedial work.

Many individual aspects of such regimes are also common, including: strict liability for environmental damage and increasing amounts of property damage; some form of liability – often strict – for historic damage; limited defences; growing attention to biodiversity damage; a shift towards use-based clean-up standards; progressively widening access to justice; and a concern to avoid obstacles to redevelopment of urban and industrial sites. At the same time, one of the fundamental objectives of most regimes, as in other areas of liability law, has been to create rules which will encourage voluntary solutions – in forms such as contractual commitments within commercial projects, out-of-court settlement of disputes or wider voluntary agreements – and thereby avoid unnecessary legal action.

Established bodies of law at national level

One of the outcomes of all this is that complex bodies of law on many of these subjects have been developed over the last 10-15 years. Some countries have done more than others and some seem more content than others with the position they have reached. Those that have done most on new legal principles in this field have devoted considerable amounts of time and resources to refining their rules. As a result, some of the details of national regimes are the result of lengthy consultations, in the context of local histories and circumstances. In many cases, a first attempt at legislation and regulatory rules has had to be revised as unforeseen consequences have become apparent. Where certain aspects have proved especially difficult to resolve, a conscious decision has sometimes been made to leave room for determination in the courts.

That is the background against which EC initiatives on environmental liability must work. It has three important implications.

First, there is a bedrock of Member State law on which an EC directive can be based. Contrary to the impression given in some contributions to the debate since the Green Paper in 1993, the Commission initiative has not been invented out of thin air; many of the White Paper proposals are already established law at national level. While most countries accept that there remains room for improvement in their liability rules, no Community initiative is likely to overturn key aspects of Member State law, nor to roll back in any major way the liability burden imposed under national regimes. A major part of an EC directive would therefore be about co-ordinating and consolidating liability rules which already exist at Member State level, rather than about introducing new rules and obligations. The room for manoeuvre concerns detail and a few elements of new ground, albeit important ones in some cases.

Second, an EC directive would have to work alongside Member State laws which at times go further on certain issues or address them in a different way. Although it might enhance or supplement national laws, and require adjustment of some of the rules within them, a directive is not likely to demand that Member States remove broader or tougher rules which exist under national law. It may be necessary, however, to spell out clearly that Member States are entitled to maintain or introduce more stringent rules of their own, under Article 176 of the EC Treaty, and to confirm that features which are common in certain types of national law (wider lists of liable parties, fewer defences, absence of limitation periods, etc) are protected in this way. In their responses to the White Paper, some Member States (eg, Denmark, Netherlands, Sweden) have already suggested something along these lines.

Third, implementation of a directive would almost certainly present what might be called boundary problems at Member State level. These concern areas where the provisions of the directive overlap with different rules enshrined in national law. Anomalies could arise from this in the treatment given to similar cases or to two or more parties within a single case, where EC rules apply to one and national rules to another. Examples of where this could arise under the White Paper proposals include: the limitation of the directive to future damage, while some Member State rules apply to the past; the restriction of strict liability under the directive to listed dangerous activities, where many Member State rules, under either civil or public law, go wider; and similar disparities on the matters noted above (definition of the liable party, defences, etc). It may be possible to address some of these problems of overlap within a directive but, given the complexity and variation of Member State laws, they will not be easily overcome, so it seems more likely that they will have to addressed under national law.

This last problem is not, of course, unique to a liability instrument. As in other areas of policy, the Commission appears to have tried to address it by basing much of the White Paper on positions that are common under Member State law and acknowledging the possibility of divergent Member State rules at the margins of a directive. On the other hand, there are some potentially important differences between the approach proposed in the White Paper and that normally taken at national level.

The most notable of these is emphasis in the White Paper on a civil liability approach, in the sense of private law rights and obligations, rather than public, administrative law rules involving regulation and enforcement by government agencies, which play a substantial role under national law. Another is that the proposed directive would cover, in a single instrument, a broad range of matters which, in many Member States, have hitherto been subject to separate national or regional laws.

Separate fields of law with differing rules

On the second of those points, the White Paper proposes a directive covering two types of harm: "traditional damage", which takes in personal injury, property damage and possibly some pure economic loss, and "environmental damage", which is defined as contaminated sites and damage to biodiversity (habitats, eco-systems, etc). Within national law as it now stands in most countries, this universe is commonly addressed through three or more separate strands of law, each with its own history and rules:

(1) traditional civil liabilities of harm to persons and property – traditional damage;

(2) contaminated sites (soil, sub-strata, groundwater, surface water, etc) – the first part of environmental damage; and
(3) nature conservation (specially protected sites and species, biodiversity, etc) – the second part of environmental damage.

In some countries, (2) is further sub-divided into rules governing the different environmental media or types of activity (land, water, waste, permitted installations, etc), each with differing rules and responsibilities when pollutants escape or other damage occurs.

National law on these matters, in other words, is often not unified. If a directive were to require a single set of rules that applied across all these areas, a potentially large number of different laws would have to be harmonised. Some countries already see merit in such harmonisation and either have done it, or would wish to do so, irrespective of an EC directive. Others seem to be less convinced that a single liability regime is appropriate across all these matters. In particular, there is major disagreement about the desirability of treating traditional damage, especially personal injury, in the same way as contaminated sites. To a lesser degree, there is also some doubt about imposing the same rules on, for example, waste activities as on other industrial and commercial operations.

A directive might include some differentiation between separate fields of activity or damage, or different types of legal procedure. The White Paper already proposes some differences of this kind, between dangerous and other activities, and between different types of damage: the restriction of the significance test and wider access to justice to environmental damage, for example, and the inclusion of non-listed activities for biodiversity damage. The national experience suggests that, if all three fields are covered under a single directive, more such distinctions may have to be considered, in order to address differing circumstances.

Public v private law

A key feature of these distinctions is that, in most countries, (2) and (3) above have up to now been mainly matters for public/administrative law, while (1) is subject to private, civil law adjudication. That is not an absolute divide, because contaminated sites and biodiversity damage may give rise to civil liability actions, and public authorities may seek to recover public remediation costs from the liable parties under civil law. What no Member State or other OECD country has done, however, is rely exclusively on civil law remedies for its strategy to deal with environmental damage.

In the key policy area of contaminated land, one of the critical lessons of the last 20 years has been that actions for cost recovery under civil law rules have serious limitations and need to be supplemented by administrative powers to order remediation by the responsible parties. The balance between cost recovery and public orders varies from country to country. In some countries, administrative orders have formed the core of the contaminated land regime. In others, either civil remedies between private parties or civil recovery by public authorities (or often just the threat of it) has been enough to get the job done. In all cases, however, both mechanisms seem to be needed.

As it happens, most of the new legislation in this field over the last five years (listed above) has concerned contaminated land and has taken the form of public, administrative law regulating identification, use and remediation of polluted sites. That should not be read as a

lack of interest in civil law rules and private rights of action. In the decade before 1996, several Member States adopted what many observers see as pioneering new laws and rules on this (eg, Denmark, Finland, Germany, Netherlands, Sweden), and others have declared an interest in doing the same (eg, Austria and Spain). Even countries such as the UK, which has so far decided that case law has taken the civil or common law rules as far as they need to go for the time being, have continued to keep the civil law position under review. That interest in civil law should not be allowed, however, to obscure the importance, even the primacy in many countries, of public law mechanisms in dealing with environmental damage.

Underlying this, within the EU there has been a persistent muddle about the meaning of the word "liability". Despite numerous attempts to clarify what is meant by that term, deep-rooted conceptual and linguistic differences have tended to cloud the issue. The basic problem is that, in some jurisdictions, liability is applied solely in the context of civil (ie, private) law rules that govern the relations between private parties. In others, notably the common law countries, the term liability is used more loosely to cover obligations in both civil and administrative (ie, public) law contexts. The obvious example is the new UK contaminated land regime, which designates the liability of certain parties yet deals exclusively with the regulatory and enforcement powers of public authorities. To further muddy the waters, even the term "civil" can carry different meanings in the different jurisdictions[1].

Leaving aside these linguistic differences, it is important to emphasise that this study, like the White Paper, is concerned with *both* civil/private/common law liability *and* public/administrative law liability or obligations. There are two reasons for this. First, the European Commission has repeatedly said that it intends to leave it to the Member States to decide the appropriate balance between civil and public law approaches, providing the underlying objectives are met. Section 6 of the White Paper, on Subsidiarity and Proportionality, expressly reaffirmed that position. Second, a critical part of the proposed regime concerns contaminated land, which is predominantly addressed at national level by public/administrative law means, although sometimes with civil/private law elements as well; to ignore the public/administrative law would therefore blind the study to a fundamental aspect of the subject.

To some extent, the Commission's strategy of leaving it to Member States to decide how far they wish to implement the directive through private or public law could take care of this matter as far as EC legislation is concerned. Aspects of the public law regimes in this field borrow from, or include, civil liability rules, supplementing them with provisions addressing various regulatory powers of public authorities which would not normally be granted to private parties. On the other hand, there are limits to such parallels. Aside from the difference of fundamental purpose between civil and public law mechanisms – compensation of victims versus protection of public welfare, etc – there are important technical differences. If a directive were based largely on civil law principles, as proposed in the White Paper, and simply allowed Member States a choice of strategic approach, the question of how to adjust public law rules in order to implement it could be a complex one.

[1] It can be used in the common law countries, for example, to encompass everything that is not criminal (ie, both private and administrative matters); whereas, in civil code countries, it tends to mean matters that are not subject to public (ie, administrative or criminal) law. The use of the term "civil penalties" in the US, to describe fines imposed by the environmental authorities, is a good example of the differences.

Much of the problem would concern areas where, as mentioned above, public laws go further than civil regimes and the efficacy of Article 176 of the Treaty in protecting such provisions. There would also be an issue about the extent of Member State discretion: how far, for example, a Member State would be permitted to implement the directive entirely through public law, leaving its civil law rules unchanged. Given the differences between the two fields of law in most countries, a directive might need to be more specific about both civil and public law requirements, or at least clarify what combinations of the two would be acceptable.

What is clear is that the White Paper proposals are much closer to the civil law rules of several Member States than to typical administrative regimes. The fundamental difference in this context is twofold: on the one hand, public law rules tend to be broader and more severe from the defendant's point of view (no restriction to dangerous activities, compulsory orders to conduct specified actions with powerful enforcement rules, fewer defences, more intrusive regulation of own-site damage, often no limitation, etc); on the other hand, the initiative for bringing legal actions tends to be restricted to one, or only a few, public authorities, who are then in a position to exercise discretion in their enforcement practice, taking account of wider public policy objectives. By contrast, civil law regimes, by giving a cause of action to innumerable private plaintiffs, open the way to much less predictable litigation but, in return, tend to offer defendants greater protection in forms such as limited scope of application, broader defences and statutory limitation periods.

An important issue here is how to ensure that an effective response is initiated when significant harm occurs (or is threatened). One argument against reliance on a public law approach, requiring public authorities to enforce remedial action, is that such authorities may fail to act when the degree of damage ought to require it. That is an important factor in some countries' decision to institute strict liability under civil law and why some see such strict civil liability as essential to adequate remediation of environmental damage. Civil liability regimes can provide a powerful mechanism for promoting private enforcement, in some cases by public interest groups, where the authorities have failed to protect the environment.

The evidence at national level over the past five years is that national governments, including those within the EU, seem to be divided on the merits of this path. Some are keen to involve private litigants through civil law actions, while others prefer to keep the primary responsibility for enforcement in this field in public hands. One alternative to private law rights of action is wider access to justice under administrative law. That has been the path chosen in several countries, in various forms. Some, such as the US for example, allow public interest groups and private individuals under certain environmental statutes to initiate "citizen suits", but constrain those actions by giving the authorities pre-emptive powers to take over the action and reach a settlement, or even to curtail it on certain grounds. Others, such as Denmark and the UK for example, have broadened the legal standing for judicial review actions, allowing interest groups to challenge the authorities for failure to act.

What does appear to be common, however, is a broad acceptance of the notion of wider public involvement in the enforcement process, whether in the form of wider legal standing – under civil or public law – for private citizens and groups, as custodians or guardians of common environmental assets, or of a more far-reaching concept of environmental rights. Despite the differing routes and speeds adopted in different countries, the general notion of wider access to justice in environmental affairs seems well established throughout the OECD.

General themes

Before going on to specific aspects of the regime proposed in the White Paper, it may be useful to extrapolate a few general themes from the experience up to now within the Member States or more widely within the OECD. Some of these will be explored further below.

(1) **strict liability is firmly established as the basis for all new legislation**, either in the form of strict civil liability or by means of administrative obligations which apply regardless of fault; fault-based liability applies to an increasingly narrow, though still important, area, mostly concerning traditional damage (harm to persons and property), mainly personal injury cases, and it is increasingly circumscribed by precautionary interpretations of the defendant's duty of care; no country is any longer contemplating new legislation which has fault-based liability as its basic standard;

(2) **the details matter** – most jurisdictions have given a great deal of attention to details and technical issues within their liability and clean-up regimes, if necessary slowing down legislative initiatives to get those details right or reforming initial legislation in the light of early experience, in order to avoid disproportionately expensive errors and ambiguities; few, if any, countries are yet confident that they have resolved all the problems;

(3) **environmental damage (contaminated land and harm to biodiversity/natural resources) is largely addressed by public (administrative) law, rather than private (civil) law, mechanisms**; there are important overlaps, especially the use of civil law principles as one basis for public enforcement, but there are also important differences between these two approaches;

(4) **judicial discretion, unwritten law and general legal principles play an important part in most regimes**, particularly in relation to issues such as the burden of proof and defences, where by no means everything is written down in the relevant statutes; this flexibility is widely viewed as desirable in order to achieve efficient implementation of the regimes, although in some cases it reflects unresolved conflicts between government and judiciary;

(5) **at present, by far the largest cost burden in this field arises in response to contaminated land**, where liability and clean-up obligations are mostly regulated under public law, although a large part of the work is actually done through voluntary action in the context of urban redevelopment or economic regeneration projects;

(6) **liability for biodiversity/natural resources damage remains the least developed aspect** at national level; most countries have long had public law powers to order repair of damage to protected sites, but these seem rarely to have been enforced; many countries have now, however, begun to take steps towards wider biodiversity restoration;

(7) on the traditional damage side, **there is a growing amount of litigation and voluntary action on property damage**, in response to tightening regulatory standards, **but personal injury litigation and compensation remains relatively rare**, even in those jurisdictions where a strict liability standard has been introduced and the burden of proof

has been alleviated;

(8) in regulatory terms, **there has been a decisive move away from absolute clean-up standards for contaminated land, in favour of more flexible goals linked to future site use**, although there are signs that market pressures may drive property owners and developers to conduct clean-ups which go beyond the legal requirements; at the same time, remedy selection procedures and developments in clean-up technology have a huge bearing on the aggregate cost of the liability regime, and such procedures and technologies are still developing fast.

SPECIFIC ASPECTS

The rest of this section contains brief observations on developments and trends at national level in relation to specific aspects of the White Paper proposals. Some are examined at greater length than others. There is not scope here for detailed analysis of these issues, many of which raise complex questions of law and public policy.

Boundaries of strict & fault-based liability

There has been no major change in recent years in the boundary between strict and fault-based liability. The long-standing trend towards greater reliance on strict liability and an ever-narrowing domain for fault-based liability has continued. The essential formula is:

- public/administrative law (environmental damage) – all strict liability, with few defences, apart from some minor exceptions covering special circumstances and a common exemption or protections for private homeowners;

- private/civil law (traditional damage, plus some environmental damage) – a mixture of strict and fault-based liability, with fault playing an ever-smaller part, but remaining an important principle in certain countries and for certain types of harm, particularly personal injury; also a division between countries which have adopted legislation imposing strict liability – some limited to dangerous activities, some applying to any activity causing damage – and those that have not so legislated; where such legislation has not been adopted and where incidents fall outside the scope of such legislation, the boundary between strict and fault-based liability varies according to legal tradition and precedent, with the criteria including the nature of the activity, the nature of the harm and the type of complaint.

An important qualification here is that the distinction between strict and fault-based liability is not an absolute one; it is more of a continuum than a dichotomy. A strict liability system which allows generous defences, such as state-of-the-art or permit compliance, for example, may be less onerous on defendants than a fault-based system with a demanding duty of care and narrow defences. It is the regime as a whole that matters, not just the basic liability standard.

Nevertheless, no country has in recent years proposed new statute law in this field based on fault liability. Public law regimes addressing contaminated land and other types of harm, such as water pollution and biodiversity damage, are virtually all based on strict liability,

with very few defences. Evidence of fault, whether in the form of negligence or of a breach of statutory requirements, is not required for public authorities to order remedial action. If there is a breach of permit conditions or other statutory norms, the liability standard may even go beyond strict liability, further restricting the available defences (sometimes referred to as absolute liability) and imposing even more stringent clean-up requirements; criminal proceedings may also follow. One area where fault sometimes plays a role is in relation to extending liability to secondary parties or a narrow field of special circumstances where liability only arises if there is misconduct or negligence. In addition, decisions about apportioning liability among multiple defendants may take account of good conduct, in forms such as the degree of co-operation with the authorities once damage has occurred.

Under civil law, no more countries have since 1995 followed the example of countries such as Denmark, Finland, Germany, the Netherlands and Sweden, in adopting new strict liability legislation, although the Spanish government published draft proposals for legislation of this kind and others are known to be considering such reforms. Several countries have so far chosen not to introduce strict liability legislation in this form. They continue to rely instead on older principles, in civil law codes and common law traditions, as developed by case law, to deal with liability for personal injury and property damage. Those principles encompass a mixture of strict and fault-based liability. Property damage is increasingly subject to strict liability, which has a long history in most countries under theories such as nuisance, neighbour and property law, ultra-hazardous activities and the rule in Rylands v Fletcher. Personal injury claims still normally have to be pursued under negligence, requiring an element of fault. Where proof of fault is required, the standard of care expected of defendants is an increasingly onerous one, to the extent that in some jurisdictions the burden of proving fault has almost been reversed. The same broad position applies in countries which have passed strict liability legislation, where the events concerned fall outside the scope of those laws.

Scope: types of activity & types of damage covered by strict liability

There has been no major change in recent years in the basic position regarding types of activity subject to strict liability in the environmental field. Under civil law, there are significant differences between countries on the scope of strict liability, as noted above. Within the EU, the Member States which have adopted strict liability legislation are divided into three groups, in terms of the type of activity that is covered:

- any activity which causes environment-related harm (eg, Finland, Sweden);
- an open-ended definition of dangerous activities (eg, the Netherlands); or
- a closed list of dangerous activities or installations (eg, Denmark, Germany).

In those countries which have not passed legislation of this kind, the incidence of strict liability under traditional liability rules is partly based on the degree of danger inherent in the causative activity, although that is not the only factor. The same applies to events outside the scope of the regimes where countries have so legislated.

Public law regimes do not discriminate in this way; strict liability for clean-up of environmental damage is assigned to various parties deemed to be responsible for it, irrespective of the kind of activity involved. In some countries, there is an exception for

private homeownership, which is either excluded from the regime or granted various protections.

As far as types of damage are concerned, there are signs of strict liability being increasingly imposed for biodiversity damage; for example, the Part IIA contaminated land regime in the UK and the increasing attention being given to this under the French contaminated site programme – both public law systems. In some countries, it remains unclear how far general provisions on protection of the environment will be a sufficient basis for legal actions assigning liability for damage to biodiversity. These tend to be limited to prevention of harm or clean-up of pollutants, rather than restoration of habitats or eco-systems, but some of the definitions are sufficiently open to suggest that biodiversity factors are likely to be captured in the long run. On the other hand, civil liability for such damage has existed under Italian law for some time – albeit requiring some evidence of fault – and many countries have long had public law powers allowing remedial orders to be issued in the context of damage to protected sites, although those powers have not often been used.

Another relatively new area of debate in relation to damage is the controversy surrounding the definition of harm in the context of genetically modified organisms (GMOs). Given the deep disagreement about the safety and desirability of GMOs, several issues are being raised in many EU and OECD countries concerning the contamination of non-GM sites by GM substances. Among other things, even where such substances are not deemed intrinsically hazardous, both critics of GM technologies and victims of contamination have argued in several countries that their entry into previously non-GM sites compromises a potentially valuable GM-free status with tangible financial and reputational consequences. A key aspect of this controversy has been the question of whether the integrity of a site should be defined according to a zero threshold for GM contamination, opening the way for trace quantities to be defined as harmful. This raises wider questions about the definition of harm in relation to other kinds of substances (dioxins, radionucleides, alien species, etc).

There has been no major change since 1995 in the application of strict liability to personal injury: some countries have imposed it in that field (eg, Denmark, Finland, Germany, Netherlands, Sweden), subject to various constraints, while other countries have not, relying instead on established legal rules which mostly involve a fault-based liability standard. The duty of care underlying a ruling of fault, like the burden of proof in this context, varies considerably.

From outside the EU, the liability rulings against companies and public agencies in Japan for cases involving health damage caused by air pollution and other relatively diffuse emissions can be seen either as anomalous in international terms or as setting a precedent for future actions elsewhere (see section on OECD Countries).

Retroactivity

The rules governing application of strict liability to historic damage vary considerably from country to country. Most countries have provisions allowing some form of retroactive liability, in the sense of requiring remedial action from liable parties in cases where the damage has its origins in the past. Up to now, no country has accepted a principle that all damage which began before recent new laws were enacted should be paid for from public

funds. Nor does there seem to be any likelihood of such a principle being adopted in the future.

In contaminated land and some other environmental damage regimes, this often takes the form of strict liability, either under specific laws or under wider legal principles, such as public safety. The relevant statute or rule is simply silent on the date of origin of a problem. The important point to establish is that the contamination exists today and continues either to cause or threaten to cause significant harm to health or the environment. Such liability is often not even considered to be retroactive because the legal responsibility concerns a current problem and the parties in control of the offending site have a duty to remove it or otherwise prevent the harm occurring. Responsibility frequently falls on the owner or occupier of the offending site. The original causer of the harm may also be potentially liable, as may certain other parties, although it may be incumbent on the current owner to seek cost recovery from them in a civil action.

Some jurisdictions have introduced laws which apply different standards to past and future damage, reserving strict liability for the latter (eg, the Flemish Soil Clean-up Decree, the Danish Contaminated Sites Act and the Contaminated Sites Bill in Western Australia), with the burden of proving the relevant date resting with the defendant. In others, the courts have limited the application of either strict liability or any liability through various forms of time-barring which were not anticipated by the authorities (eg, Denmark and the Netherlands). Such rulings have tended to cause considerable controversy. In many jurisdictions, public law, administrative orders, as opposed to civil cost recovery actions, are not subject to limitation rules.

In many cases, legal rules have played only a subsidiary role; determination of liability for historic damage has been left to the markets to decide. A great deal of contaminated land has been repaired as part of a development project, within which the contracting parties reach contractual agreement on the allocation of costs and the state intervenes only by setting a legal framework, such as minimum standards for the remediation. Many different techniques are now used in commercial contracts to assign such actual or potential liabilities; warranties and indemnities may include sliding scales progressively shifting the liability from the vendor to the purchaser over a period of years, subject to other qualifications. Provided the site is adequately repaired as a result of such deals, the public authorities are often willing to stay out of the process. Some regimes require formal reporting of both the transaction between the parties and the remedial work programme, in order to monitor performance at regular intervals.

At the same time, although no country is prepared to offer a blank cheque, most are prepared to make a financial contribution where parties volunteer to address damaged sites, especially where their potential liability is marginal or where the proposed remedial action will lead to economic regeneration. Many countries are now developing general programmes along these lines, under the heading of brownfields redevelopment.

On the civil law side, including liability for traditional damage, most new strict liability laws contain provisions restricting their application to events occurring after the effective date of the relevant law. In countries which have not adopted such new laws, and in cases which fall outside the boundaries of those laws, liability is determined under older civil law rules and precedents. These do not generally separate past and future harm, so strict liability causes of action, where they exist, apply whenever the events took place, subject only to

separate limitation rules. Some distinction is introduced even there, however, insofar as the tests imposed for meeting certain defences, such as due diligence or foreseeability, are interpreted more strictly for recent events than for ones that occurred many years ago.

Where there is a distinction between past and future damage, the definition of the cut-off point is a particularly sensitive matter. The options include: the causative act (or omission), the pollutant release, the migration of the pollutants, the occurrence of damage and the discovery of the damage. These have widely differing implications. Whichever is adopted, the wording of the definition needs to be as unambiguous as possible in order to withstand sustained legal challenge.

Some thought also needs to be given to the rules for dealing with cases where the relevant activities or processes have occurred both before and after the cut-off date – sometimes known as "straddle sites". One solution has been to hold the responsible parties liable under the new rules only for that part of the damage which can be attributed to events after the regime came into force. Two difficulties can arise here, however: it may not be easy to divide the damage (or the response costs) in this way and it may not be possible to identify when events or processes occurred. The burden of proving the relevant divisions and dates is generally placed on the defendant, not least because that gives an incentive to keep detailed records.

There is another potential problem where Member States already have cut-off dates of their own. If an EC directive were to establish a new distinction, between events after its entry into force and those before it, these countries might be faced with two separate cut-offs, entailing three different sets of rules. In principle, the Member State could move its own cut-off date forward to that of the directive or could attempt to apply the directive's post-entry provisions back as far as the national cut-off date. Both those approaches would raise difficulties, however; the first, in dealing with parties which had already settled under the old, national strict liability rules; and the second, in finding a way to deal with any differences between the directive and the national regime

Liable parties (see also Apportionment, Defences and Causation)

The trend on who is liable for the types of damage covered in the White Paper is towards increasing qualification and refinement of two basic categories of party which have been at the heart of most liability regimes for many years:

- the causer of the harm, and
- the site owner or occupier.

What at first appear simple categories have had to be refined in order to include some parties who might otherwise escape liability (successors, etc) and to exclude others who are thought to merit protection (innocent owners or purchasers, minor contributors, etc). This process of refinement has proved difficult, but also, it seems, unavoidable. Policymakers designing regimes have been torn between several conflicting goals, including: simplicity (in order to minimise transaction costs), fairness (in order to maximise acceptance of the rules) and effectiveness (in order to protect health and the environment). They have also had to consider circumstances on the ground – both physical factors, like site conditions and histories, and legal ones, such as corporate and contractual relationships – which have

sometimes proved more complicated than was originally anticipated. In many countries, further refinements are expected as more experience is gathered.

In many cases, statute law requires the causer to be pursued first and the owner/occupier to be held liable only if no causer can either be found or has the resources to pay for the remedial action. That is not always the case, however. Civil liability regimes, in particular, often allow the plaintiff to pursue any of the listed parties, with those held liable solely for ownership or occupation sometimes given a statutory right of recovery or contribution from others who caused the harm, if they can be found. The latter does not, of course, guarantee recovery.

The definition of the causer is important here. First of all, a party may be a causer by omission – a failure to take appropriate preventive action – as well as by positive action. The test for omission can be a fairly onerous one. The category of "knowingly permitting", which is long established under UK law, includes any party which knew or should have known about the harm, or threat of harm, had the opportunity to remedy it and failed to do so, irrespective of when the problem originated or whether the knowing permitter was in any way connected with those origins. Even if they own or occupy the offending site, such a party is liable as a causer, not as an owner or occupier, and can not therefore take advantage of the protections sometimes offered to owners and occupiers.

Identifying the causer can also be difficult where the polluting activities are part of a multi-party operation. This might be a joint venture involving several companies and organisations or a construction project involving a client or clients, a main contractor and numerous sub-contractors. The causative acts or omissions may not be easily assigned to any one of these, although some may be entirely uninvolved (see "Apportionment among multiple parties"). There are also further issues about causation, such as multiple causes, proximate cause and remoteness, some of which are discussed below, under "Causation and the burden of proof".

Several grounds are given for including owners and/or occupiers as liable parties: because they have a long-standing duty to keep their land in a safe condition; because they either have profited from the presence of the pollutants or will profit from the clean-up; and because exposing purchasers to this liability risk provides an incentive for them to investigate land thoroughly before they take possession of it, so helping to identify pollution problems. They may also be targetted under public law regimes as responsible for doing the clean-up, because they control access to the site and may have to interrupt their current operations in order to allow remedial work to take place.

An important qualification under some, though not all, public law regimes is that the party obliged to carry out the clean-up may not be the one deemed ultimately liable for its costs. Such separation of the clean-up obligation and liability can be somewhat academic, however, if it proves impossible for the party cleaning-up to recover its costs from the liable party in a civil law action. Some recent regimes have attempted to improve the chances of recovery by including a statutory right of recovery within the law, in order to remove some of the obstacles that can arise under traditional civil law rules.

Perhaps the more important development in recent years as far as owners/occupiers are concerned has been a trend since the mid-1980s to incorporate an innocent purchaser defence in most regimes. This runs counter to some long-standing traditions of property

transfer, under which the buyer was responsible for checking the condition of what he was buying (*caveat emptor*, etc). Under the new defence or exemption, the burden is very much on the owner/occupier to prove his "innocence" and the test is usually extremely difficult, especially for larger organisations, which are increasingly expected to discover problems before they make a purchase[2]. Nevertheless, since the 1990s, this kind of protection has been supplemented or extended in many countries under initiatives designed to promote redevelopment of derelict urban and industrial sites – so-called brownfields programmes.

Causer and owner/occupier are not the only categories cited in liability regimes, however. Some regimes go beyond these two to make other parties potentially liable in a variety of circumstances. These extra categories can be divided into primary and secondary liable parties. The main other primary categories are waste (or pollutant) producers and past owners or occupiers.

Under some waste or clean-up regimes (eg, France, Italy, the US, Canada) a waste producer can be held liable for damage caused by a third party to whom they consigned their wastes. Although most EU Member States have now provided rules for exemption from liability where wastes have been properly consigned to another party, the grounds for such exemption seem to vary significantly and the arguments for including waste producers (they control the nature and quantity of waste produced, etc) remain attractive in several jurisdictions[3]. Improper consignment, in the form of a failure to disclose or other misrepresentation of the nature of wastes, opens a waste producer to fault liability in most jurisdictions – including, in some cases, criminal sanctions.

Past owners or occupiers can be drawn into the liability net, either as co-responsible with present owners/occupiers or as a result of the present owner/occupier successfully claiming the innocent owner/purchaser defence. Other possible primary liable parties include waste or pollutant transporters, waste brokers (or similar agents) and "notional" owners of land (those with a vested financial interest). These are less commonly included.

Secondary parties that can be drawn in include parent companies, shareholders, directors and officers, joint venture partners, receivers in bankruptcy, lenders, consultancy advisers, equipment suppliers and others. Some regimes formally exclude some of these categories, although those exclusions usually involve boundaries beyond which the protection disappears. As far as parent companies, shareholders and, to a lesser extent, corporate officers are concerned, most countries have rules, under general corporate law, to prevent deliberate evasion of liability by illicit use of the corporate form (under-capitalised subsidiaries, shell companies, common executive control, etc). Some countries (notably the US) have gone further than that, however, holding parent companies responsible for the otherwise orphaned liabilities of an insolvent or dissolved subsidiary, on the grounds that the normal corporate protections should be waived in cases of serious environmental harm.

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[2] It may include criteria such as: neither knowing nor having any reason to know of the presence of contamination at the time of the purchase, despite conducting appropriate investigations; no sign of any discount in the purchase price; sometimes even no knowledge of the previous owner or occupier. The legend in the US, where this defence was introduced under CERCLA in 1986, was that, to qualify as an innocent owner, one had to be anything but innocent. The larger the defendant's resources, the more he is expected to investigate, to the extent that some observers now feel that large companies have little chance of protection under this defence.

[3] They were also prominently rehearsed in the Explanatory Memorandum to the first version of the long-since discarded proposals for a civil liability for waste directive (COM(89) 282 final) – see Section 5 of that Memorandum, entitled "The principle of liability".

Apportionment among multiple parties

Apportionment – how to share liability in cases involving multiple defendants – has been one of the most intensely debated aspects of environmental liability. For many people, it goes to the heart of the issue of the fairness or unfairness of the liability regime. At the same time, it can be critical to securing an adequate remedy for the victim, whether a person, an organisation or the environment itself.

The policy options are usually presented as a choice between:

- joint and several liability – under which each liable party is potentially liable for the whole damage, insofar as his damage is inseparable from the rest; and
- proportionate liability – under which each party's liability is limited to an amount equivalent to his share of responsibility for the harm or for the costs of the necessary response action.

In reality, most jurisdictions have adopted systems which combine elements of both these options. The basic principle in the great majority of countries is joint and several liability. This has a long history within liability law in general, as the most effective mechanism for ensuring that victims recover in full, by relieving them of the burden of proving each of several defendants' respective share of responsibility. That burden lies instead with the defendants, who are entitled to bring civil actions of their own for contribution or cost recovery from other potentially liable parties. Even with this system, however, a defendant is only jointly and severally liable for harm that is indivisible; if one defendant's harm can be distinguished from that of the other parties, the first defendant is only liable for the costs arising from his own harm. The problem is that, in environmental cases, such division is often extremely difficult or even impossible.

Within modern environmental law (including most developments since 1995), legislators have generally qualified joint and several liability by including instructions that courts or public authorities should try to apportion liability according to each defendant's share of responsibility. Some jurisdictions have also sought to encourage division of harm into separate units, as far as circumstances permit. Alongside these legislative steps, courts have also frequently used their discretion to allocate shares of liability on equitable grounds. The end result is a variety of systems whose object is equitable sharing, as far as possible, but whose ground rules provide for joint and several liability where such sharing is not possible.

A minority of jurisdictions (eg, the Danish Soil Protection Act, some US state superfund laws) have attempted full proportionate liability as the basic rule. This seems to be confined to public law instruments, the same jurisdictions mostly retaining joint and several liability for civil actions in order to protect the victim's rights. On the public law side, proportionate liability requires the state plaintiff to show each defendant's share of responsibility and to allocate liability accordingly. Where this is not possible, because of insufficient information or other complications, the fall-back position is generally one of equal shares. This remains an unusual approach, with several reasons offered for its relative unpopularity:

- the burden of proving each defendant's share can be an onerous one, involving considerable transaction costs for the plaintiff and slowing down the whole process of remedial action and liability allocation;
- it risks leaving the public purse with a much larger share of the overall costs;
- it tends to discourage settlement on the part of defendants; and
- many jurisdictions which have not followed this course seem to believe that reasonably fair apportionment is possible under joint and several liability, at least where equitable division is encouraged.

Between the two extremes, some jurisdictions have been experimenting in recent years with laws which contain extra elements of proportionate liability, without relinquishing joint and several liability altogether. At its simplest, recent legislation in Finland, the Netherlands and the Canadian province of British Columbia, includes a limitation of liability to a proportionate share for minor contributors at multi-party sites, while retaining joint and several liability for larger contributors. Regulatory changes under the US federal Superfund regime to protect *de minimis* parties, contributing less than 1% of the aggregate damage, are intended to achieve a similar result[4]; that regime also limits liability to a proportionate share where defendants bring contribution actions against other liable parties – as do most other jurisdictions.

The new UK contaminated land regime, Part IIA, goes further towards proportionate liability, though still without abandoning all elements of joint and several. This public law regime forbids the enforcing authorities from assigning all the liability to one or a few members of a larger liability group, instructing them to apportion the costs as far as possible according to each defendant's responsibility for causing response costs to be incurred, taking account of various equitable factors. At the same time, however, it reassigns orphaned liabilities to the remaining liable parties and holds liable parties responsible for secondary substances arising from chemical reactions or biological processes involving the pollutants they have each released. It also prevents certain exclusion tests, which might relieve some parties of liability on what are essentially equitable grounds, from being applied, if their application would lead to all remaining members of a liability group being excluded – ie, if no liable party would remain. Such equitable relief is, in other words, made conditional upon someone remaining liable. These various qualifications mean that the UK contaminated land regime is not strictly a proportionate one, despite containing stronger than usual presumptions in favour of proportionate sharing.

The rules for dealing with "orphan" shares are important in any apportionment system. These are the shares of liability that arise where one or more liable parties can not be identified, no longer exists or does not have sufficient resources to pay the required amount. The basic rule under joint and several liability is that orphan shares can be assigned to the remaining liable parties whereas, under pure proportionate liability, they can not. In reality, most joint and several systems, under environmental laws, leave substantial discretion to either the public authorities or the courts to decide whether or to what extent the liable parties should pick up this bill. In the US Superfund regime, for example, provisions allowing so-called "mixed funding", under which orphan shares may be paid for out of the Trust Fund, have been increasingly used in recent years, where previously such shares were routinely assigned to the remaining liable parties.

[4] So-called *de micromis* parties, contributing less than 0.1%, may be released from liability altogether.

Other key issues concerning apportionment include:

- the criteria for determining individual shares – the criteria used seem to be broadly similar around the world, based on what in the US have become known as the Gore factors (volume, toxicity, time on site, substance mobility, degree of co-operation with the authorities, etc);
- the mechanisms for determining shares – some countries have explored the possibilities of independent allocation processes (panels of independent expert assessors, procedures for receiving evidence, etc), but these can raise problems of their own (notably, the constitutionality or legality of binding allocations, the rights of parties who dispute allocations, etc);
- the more general problem of how to encourage settlements (incentives for settling parties, possible penalties or risks for non-settlors, etc) – one of the paradoxes here being that the more protections that are included for defendants (defences, exemptions, appeals, etc), the less incentive there is to reach an early settlement;
- the question of whether to help certain parties recover from (other) liable parties in the event that public authorities or private plaintiffs enforce remedial action or payment of damages on a single party, or a small number of those who are potentially liable – options here include inclusion of a statutory right of recovery to make it easier to recover than it would be under normal civil law rules; and
- the question of complexity or level of detail – this is one of the key questions raised by the new UK approach: whether it is better to have a highly prescriptive, detailed system of apportionment or a simple one; some observers feel that the answer to this depends upon the jurisdiction – in some jurisdictions, a simple rule is all that is needed for sensible decisions to be reached, whereas, in others, there is a high risk of litigation on every possible ambiguity in the rules, unless considerable detail is included in the statutory text.

Defences, exemptions, etc

Both the defences available against liability and the subject of the next sub-heading, Causation and the Burden of Proof, are among the most difficult parts of this subject to assess. One reason is that, in both cases, most jurisdictions tend to allow a wide margin of judicial discretion on these aspects of the law. A great deal therefore depends on the circumstances of the particular case and, conversely, case law can play an important role in the way these rules and principles are applied.

As far as defences are concerned, other factors that must be taken into account include the following:

- any requirement for establishing liability can provide grounds for a defence or legal challenge – a thorough analysis should therefore examine a wide range of features within a regime: defences, exemptions, exclusions, definitions, pre-conditions, etc, anything that the plaintiff may have failed satisfactorily to prove;
- the fact that a defence is not cited in a legislative text does not necessarily mean that it is not available – some regimes, especially public law ones, do not mention defences at all but, in almost all cases, there are protections in terms of general legal principles or established rules of law (administrative fairness, proportionality, etc);

- some conditions which are not sufficient for a defence may nevertheless form a basis for mitigating liability, to a degree that can have a significant effect on the defendant's ultimate burden; and
- as environmental liability regimes have been refined in recent years, progressively more complex conditions for exemption, mitigation or defence have been added in many countries (innocent ownership, minor contributor or secured creditor status, terms of trusteeship or tenancy agreements, brownfield development protections, etc), to an extent that much now depends on highly detailed definitions of what is or is not permitted – there is every sign that these very specific protections will play a growing part in liability exposures in the future.

At the same time, the defences available are a fundamental aspect of any liability regime, especially one based on strict liability. Once the test of proving fault is removed, the defences and the test of causation play an increasingly critical role. The defences that exist under various codes, statutes and lines of precedent at national level tend for this reason to be very sensitive matters for most of the interested parties. A proper analysis of comparative defences in the countries concerned is beyond the scope of this study, however; only certain general points of comparison can be made here.

The last five years have shown no major changes to the basic pattern on general defences, except perhaps a narrowing of the grounds deemed sufficient to qualify for certain protections (more onerous duties of care and knowledge requirements, etc). There are important variations from country to country, but the range of options available in different contexts is broadly similar. The one relatively new development has been the provision of a growing number of selective defences or exemptions for specific categories of party (see below), although this trend began before 1996.

In all cases, there are important differences between private/civil law and public/administrative law rules. Public law regimes generally specify fewer defences; some include none at all. Defendants may be entitled to claim defences borrowed from civil law or to protection under established general principles but, equally, some basic civil law defences, such as act of God or Third Party intervention, may not be available to resist an administrative clean-up order, although they could be important in a civil action for cost recovery from other parties. On the other hand, permit compliance may carry some weight under public law where it is not normally a defence under civil liability.

Apart from the public-private differences, many regimes differentiate between types of harm (eg, personal injury versus property damage) or qualify particular defences with pre-conditions (eg, the German Environmental Liability Act allows more defences if there has been no disruption of "normal operations").

Almost all civil law regimes, and some public law ones, allow certain basic defences in terms of an act of God, act of war or civil unrest, or overwhelming and unavoidable natural disaster. The term *force majeure* is sometimes used to cover some or all of these, although it can have a discrete meaning of its own. On the whole, these defences are interpreted narrowly – it is often a requirement that the harm has been exclusively caused by these factors – and afford relatively little protection.

Many regimes – again, mostly under civil law and much less commonly under public law – allow wider defences in terms of the actions of either the victim or a Third Party, such as

intervention of a Third Party or consent, connivance or negligence on the part of the victim. These are generally further qualified and require substantial interpretation by the court, in the light of the circumstances of the case. Negligent contribution of the victim, for example, is graded under the Danish Environmental Damage Compensation Act 1994 to require gross negligence in cases of personal injury, but only simple negligence in property damage cases. Intervention of a Third Party is always subject to the defendant having taken adequate precautions to prevent such intervention resulting in damage. As with the traditional defences cited above (act of God, etc), the harm often has to be exclusively caused by the outside intervention. The mere fact that someone has entered the defendant's premises and deliberately discharged pollutants from some form of containment, is not usually sufficient to exempt the defendant from liability unless he can show that a high standard of precaution has been taken to prevent access to harmful installations and to contain the results if such access occurs. This precautionary requirement seems to be becoming more severe. It also seems to be applied differentially according to the level of resources available to the defendant. This matter may be contested under causation, rather than defence: ie, whether the defendant's failure to contain the damage resulting from outside intervention is sufficiently significant in itself to amount to a cause of the harm (see Causation/Burden of Proof below).

Some regimes specify a defence in terms of damage being tolerable in the context of local circumstances. This is effectively a variation on the general test of "significance" – is the damage sufficiently serious to warrant compensation or remedial action? Not all regimes provide it as a defence, but it could be argued that some judgment about significance is inevitable and many jurisdictions relate that to some extent to the surrounding circumstances or accepted custom and practice within comparable activities. How far they do that, however, seems to vary and the level of tolerance or significance adopted is critical to the effect of this defence. It is not generally available in personal injury cases, although again any injury to health has to be shown to be more than trivial. The German Environmental Liability Act 1990 (UHG) confines this defence to property damage cases and makes it conditional upon maintenance of normal operations. The Finnish Environmental Damage Compensation Act 1994 limits its availability further by refusing it in both personal injury cases and cases of property damage where the harm is "not slight". Published drafts of the proposed Spanish civil liability law would make this defence conditional upon (a) full compliance with authorisations and (b) the impossibility of avoiding the damage without disproportionate cost.

There is less agreement about a series of broader defences based either on the level of knowledge available at the time of the causative event, such as state-of-the-art/development risk and foreseeability, or on standards of care, such as due diligence, all reasonable precautions or best practicable means.

Some regimes allow a defendant's inability to foresee a harmful outcome from his actions as a defence (eg, UK civil law claims for property damage under strict liability rules – nuisance or Rylands v. Fletcher – where, following the *Cambridge Water Co* case, the harm must be foreseeable). Jurisdictions which allow such a defence in one field of law may still refuse it in another; in the UK, for example, foreseeability is not a defence under the public law contaminated land regime (Part IIA). There are also important details within these defences, such as the type of harm which should have been foreseeable and the kind of person who should have been able to foresee it.

There are similar variations in definitions people attribute to the state-of-the-art (sometimes referred to as the development risk) defence, such as how global the universe of scientific and technical ignorance should be and how far a defendant's lack of awareness can be graded according to his resources. On the whole, however, the state-of-the-art defence is not available under European or other OECD environmental liability regimes, except where a fault-based standard remains and in a minority of traditional strict liability causes of action (where state-of-the-art knowledge is a factor in defences such as foreseeability or best practicable means). The unforeseeability of harm, changes in scientific understanding and associated matters may, however, be taken into account more widely as mitigating factors.

Defences in terms of standards of precautionary and preventive behaviour, such as due diligence, all reasonable precautions or best practicable means, are similarly absent from most new strict liability regimes, but they may arise as discretionary or mitigating factors and they are sometimes available under more traditional strict liability standards (eg, nuisance in the UK).

Compliance with regulatory permits is not normally allowed as a defence. Under civil law, it is rarely, if ever, sufficient. It is seen as grossly unfair for a private victim to be prevented from recovery or compensation simply because a defendant's actions have been sanctioned by a public authority. Under public law, some protection is normally available inasmuch as an operator who is licensed to discharge certain quantities or concentrations of pollutants can not then be proceeded against by the regulatory authorities for the mere fact of those self-same discharges. Similar protection is available under environmental impact legislation where development consents specify particular instances of damage as permitted as a necessary part of the development.

What is less clear is whether an operator may be held responsible, even under public law, for remedying harm which results from licensed emissions when that harm was not foreseen or specified within the relevant licence. There seem to be variations here between countries, in two respects: (a) whether a statutory permit should be taken to imply a duty to avoid such (unspecified) harm, on the basis of wider legal requirements, and (b) whether the permitting authorities may be held liable for their own role in failing to prevent such harm. A few jurisdictions have gone to the trouble of explicitly ruling out permit compliance as a defence even under public law rules; for example, Art.27(3) of the British Columbia Waste Management Act 1996 (see Canada in the section on OECD Countries). Most others simply do not mention it and implicitly leave it to the courts to decide (i) whether a general duty to avoid harm outweighs statutory permissions to release, and (ii) whether a defendant's actions merit protection under general principles of administration or because of negligence on the part of the permitting authorities.

There are differences between countries over the liability exposure of regulatory authorities: in the UK, for example, those authorities are protected by sovereign immunity; in France and many other countries, they are not. The suggestion in the White Paper (Section 4.3, "Application of equity") that, in certain circumstances, liability be shared between the polluter and the permitting authority would pose a major problem for Member States with a tradition of immunity for such authorities. Even where immunity is not given, however, there is a widespread conviction that exposing the regulatory authorities to liability risks, except in egregious cases of negligent conduct, would be undesirable from a public policy point of view because, as risk-averse public bodies with limited budgets, it would drive them

either to set much more stringent permit conditions or to re-define permits in such a way that the permit holder bore all the significant risks.

That is not the whole story, however, since, irrespective of a legal defence, a government may be willing to intervene with public support where it decides that a potentially liable party's actions are worthy of protection. The German Soil Protection Act 1998 (BSG), for example, allows the remediation objective to be reduced from full clean-up to less onerous measures such as containment where (a) at the time of the causative event the defendant did not expect harm to occur because he was fully compliant with the legal requirements and (b) his good faith is worthy of protection, taking account of the circumstances of the case (Section 4(5)). Given the widespread use of voluntary agreements, voluntary actions and protected development consents to secure public law clean-up objectives, it must be assumed that most governments are willing to use such discretion where they think it is sensible in the context of public policy objectives.

A different line of defence is often available, although not always specified in statute, in terms of a compulsory order of a public authority. It is specified, for example, in the Danish Environmental Damage Compensation Act 1994 but, even where it is not, most jurisdictions would recognise it as a defence under general legal principles.

The main new development in recent years has been the adoption of more selective defences and exemptions, as part of the process of refining environmental liability rules. These are intended to filter out parties who might be liable under general liability rules, but who are thought to merit protection either because their responsibility was marginal or because imposing liability on them would obstruct other policy objectives. The most common of these are:

- the innocent owner/innocent purchaser defence[5];
- protections or releases from liability for small, or very small, contributors (*de minimis/de micromis* parties);
- exemptions for lenders (secured creditors) and other financial or legal service providers (receivers in bankruptcy, factors, trustees, etc); and
- exemptions or protections for parties involved in development of derelict urban or industrial (brownfield) sites.

These are usually tightly defined in order to maintain pressure on the relevant parties to observe high standards of environmental care, by retaining a risk of liability (or further liability) if behaviour falls below such standards. Other groups which are cited occasionally in such provisions include tenants with no financial interest in the land they occupy, consultants and other advisers, insurers and various intermediaries.

One important question for several of these defences – especially the exemptions for secured creditors and similar service providers – is whether inclusion of such a protection in a statutory text helps or not. Some observers have argued that the relevant parties might be in a better position if they were not mentioned at all, on the grounds that most courts would not think of drawing them into the liability net unless their conduct had clearly exceeded the normal service relationship with their clients. Where an exemption has been written in, it is

[5] See footnote 2 above, under Liable parties, for an outline of the typical conditions for this.

limited to specific types of behaviour, which are not always satisfactorily defined. It could therefore, arguably, raise the risk of liability whenever activities go beyond those limits.

An altogether wider range of factors is now frequently enshrined in environmental liability regimes of all kinds as possible criteria for mitigating liability in cases involving multiple parties (see Apportionment, above). These typically combine scientific assessments of relative responsibility for the occurrence of harm (volume of pollutants released, toxicity, time on site, substance mobility, etc) with more traditional measures of good behaviour (compliance, normal operations, due diligence, prompt reporting of an incident, co-operation with the authorities, etc). In this respect, aspects of fault remain important even under a strict liability regime.

Causation/Burden of Proof

Like defences, the rules governing causation and the burden of proof are relatively opaque. The reasons for this include the amount of discretion left to the courts on key concepts (balance of probabilities, preponderance of the evidence, general acceptance within scientific opinion, proximity and remoteness, etc), differing access to information (discovery rules, availability of scientific evidence, etc) and differing access to the courts (costs, other obstacles to bringing an action, etc). Each of these matters has consequences for the burden faced by the plaintiff and the defendant in conducting a case, yet none is easy to compare across different jurisdictions.

As far as the burden of proof is concerned, the first question is, burden of proving what? There are several different elements of a liability case which may have to be proved by one or other party, such as: fault, nature and degree of harm, causation, defences or exemptions, share of liability, date of occurrence, appropriate remedy, etc. Some of these have occasionally been muddled in recent debate in this field.

If we take the two main ones, fault and causation, the burden traditionally falls on the plaintiff. Despite some conceptual variations between countries or jurisdictions, the standard of proof required, in both civil and administrative actions, does not seem to differ fundamentally. It generally involves a principle such as preponderance of the evidence or balance of probabilities, entailing a greater than even chance of the relevant proposition being true.

In the case of fault, where that remains a condition of liability, the trend is towards an easing of the burden of proof for the plaintiff, mostly through case law. Courts in many countries seem to be applying a progressively tougher duty of care on defendants in environmental cases. In some countries, such as Spain, observers feel this has reached a point where the mere existence of harm is almost enough in itself to establish fault, particularly where the defendant has access to substantial financial and other resources. In Italy, two articles of the Civil Code formally transfer the burden of proof in this respect.

The extent of this alleviation seems to vary considerably, however. Some of the variation appears to be down to judicial discretion; some to more entrenched legal traditions. UK courts, for example, seem more reluctant than others to ease the plaintiff's burden in relation to fault, perhaps partly because of the relatively open discovery rules, which make it easier than in some other countries to obtain documentary evidence from defendants. On the other

hand, a defendant's financial resources and sophistication seem to be taken into account in most countries when deciding the duty of care or precaution that is required – the greater the resources, the more it is presumed that the damage could have been prevented.

As far as proving causation is concerned, the picture is more uneven. Some countries either have adopted, or appear to be adopting, principles of alleviating the burden of proof in this context, even with a strict liability standard. Others have not. In Germany, for example, the (civil) Environmental Liability Act provides for such alleviation, but makes it conditional upon a disturbance in the defendant's normal operations – if there is no disturbance, there is no presumption of causation. A similar formula has been proposed in the published draft for a civil liability law in Spain; that contained a presumption of causation where the circumstances of the case suggest that the relevant activity is likely to have caused the harm, unless it remained within all applicable authorisations. In Sweden, some observers feel that the critical passage (Section 3) in Chapter 32 of the new Environmental Code, covering civil liability, amounts to a form of rebuttable presumption where there is *prima facie* evidence of probable cause, although the text alone can be read as simply a statement of the balance of probability test. In Finland, Section 3 of the 1994 Environmental Damage Compensation Act is very similar to the Swedish wording, the law having been modelled on the original Swedish act (passed in 1986). In both France and the Netherlands, observers report trends towards increased use of alleviation in case law. In the French case, this relates to guardian responsibility cases; in the Netherlands, to judgments in the Supreme Court which are seen as building on a long-standing principle of judicial discretion where there are strong *prima facie* indications of causation.

Many other countries continue to insist that the burden of proving causation remains with the plaintiff, especially under strict liability. There seems to be no sign, for example, of the principle of *res ipsa loquitur* (the thing speaks for itself), which has long existed in common law countries, being used to provide any significant alleviation in this context in the UK or other common law jurisdictions.

A different question arises in relation to public law actions brought by statutory authorities. In principle, most countries impose the same burden of proof on the authorities as on civil plaintiffs. Some observers believe, however, that the courts are inclined to give the authorities the benefit of the doubt, assuming that they would not initiate action unless they had sufficient evidence, thereby placing the burden on the defendants to prove otherwise. Both this issue and the more general question of what counts as sufficient proof under the balance of probabilities/preponderance rule are difficult matters to analyse without much more detailed investigation.

As far as causation itself is concerned, there are some long-standing legal issues on which jurisdictions differ. These are too technical to examine here, but revolve around concepts such as proximity and remoteness, on which differing principles exist in different countries.

Among recent developments, there has been some interest in a 1998 UK House of Lords judgment dealing with the issues of multiple and sufficient causes. In *Empress Car Company v National Rivers Authority*, the court established a precedent, at least for England and Wales, under which an operator's activities, although apparently innocuous in themselves, can be deemed a cause of pollution where a release of pollutants occurs following a failure of the integrity of the operating plant, even if that results from the intervention of a Third Party, whether deliberate, malicious or merely flawed. The principle

defined by the court centred on a distinction between ordinary and abnormal or extraordinary occurrences. A defendant, it ruled, remains responsible for causing harm where its operations are interrupted by Third Party action, unless the intervention amounts to an abnormal or extraordinary occurrence, such as an act of terrorism. Acts of vandalism (or, in a subsequent appellate case, the failure of a seal in a new hose) were deemed events of ordinary occurrence, however unforeseeable their incidence and nature, and operators handling potentially harmful materials should take adequate measures to prevent such occurrences resulting in damage. If they failed to do so, their own actions in handling the materials would constitute a cause, regardless of whether other causes were also at work.

Another key issue concerns how far causation has to be proven at all. Under some regimes, liability is only loosely tied to causation; some observers would argue that causation is not a necessary condition, as far as certain categories of liable party are concerned. In the case of land which is either itself polluted or from which pollution has migrated, or threatens to migrate, to other sites, where a regime holds owners, occupiers or holders of the land liable for remedial action, even where their actions were not responsible for the original entry of the pollutants on to the land, it can be argued that liability rests on mere custody, rather than causation. On the other hand, that custody is only a basis for liability insofar as the land concerned is the source of harmful pollutants and, in that sense, a cause of pollution, whether of the site itself or of neighbouring sites.

But even leaving aside owners and occupiers, the category of causer or polluter, which now increasingly often stands above the owner/occupier in a hierarchy of liable parties under administrative law, encompasses a wide range of people not all of whom might be said to have caused the harm in the narrow sense of directly instigating the original release of pollutants into the environment. If there is a trend in this field, it seems to be a twofold one of widening the definition of the party responsible as a causer of harm – to include, for example, parties responsible in some corporate sense for the actions of the immediate actor or parties who by taking custody of pre-existent pollution assumed responsibility for its containment or remediation – while, at the same time, building in targetted exemptions and defences to prevent such expansion going too far (see Defences, exemptions, etc, above).

It is also important to bear in mind that causation and burden of proof are separate matters. Some participants in the recent debate about environmental liability have tended to conflate them by assuming that the main obstacle to establishing a causal connection between a polluting activity and a certain type of harm – often personal injury, in this case – is the relative burden of proving causation. While the traditional placing of that burden on the plaintiff undoubtedly hinders a claim, its alleviation in some form is never likely to go so far as to require a defendant to prove that his activities did not cause the harm, in the absence of any convincing evidence of a link. Certainly, this is not something that has happened in any of the countries studied here.

If the science is not there, in the sense of a body of scientific research and opinion which confirms the likelihood of the relevant connection, simply transferring the burden of proof, or part of it, to the defendant will not be enough to establish liability. Environmental incidents inhabit a field where scientific understanding is relatively immature, conclusive evidence often does not exist and popular suppositions may reflect no more than innocent correlations, with no causal basis. Even if they identify real causal connections, but simply lack a sufficiently robust body of evidence to prove them, no jurisdiction is likely to adopt an unqualified reversal of the burden of proof, in the sense of presuming a defendant's

responsibility irrespective of any evidence, until he can demonstrate that he is not responsible. To do that would require the defendant to prove a negative, something which is often impossible, especially in areas where the science remains uncertain.

The best that the plaintiff's side can hope for is some alleviation of their burden, in the form of a presumption of causation where there is solid *prima facie* evidence of its probability – known causal connections, apparent absence of alternative causes, etc. That will still leave open the possibility of the courts deciding, in the light of rebuttal evidence from the defendant, that the real cause remains unknown or elusive. What is difficult to measure in any objective way is how far the *prima facie* evidence test, where the burden of proof has been alleviated, falls short of the balance of probabilities/preponderance of the evidence test, which obtains without such alleviation. It is tempting to conclude that this is merely a matter of degree, subject to a wide margin of judicial discretion, but that probably understates the significance of formally alleviating the plaintiff's burden.

Among other things, the need for some form of discretion, whatever the provisions on alleviation, is underlined by the possibility of certain scenarios which are often overlooked, such as:

- legal actions in which the plaintiff has far greater resources than the defendant (eg, a large corporation suing a private individual or a non-profit organisation);
- simultaneous actions and counter-actions between two plaintiff-defendants, each alleging that the other caused the harm; and
- the right of a plaintiff, at least in some jurisdictions, to bring simultaneous suits against different defendants, alleging alternative causal connections.

In these circumstances, an unqualified presumption of causation and reversal of the burden of proof would produce anomalous results.

It is also important to bear in mind that the prevailing rules on discovery of evidence seem to vary significantly from country to country, including critical matters such as applications to reveal material documents and rights to compel defendants to answer specific questions. These are generally governed by basic rules of procedure within each jurisdiction and not normally adjusted for each statute or field of law, yet they can have a substantial bearing on the relative burden borne by the parties to a legal action. So too can the costs and other obstacles to initiating and proceeding with a lawsuit.

Other aspects

Contaminated land: In recent years, measures to deal with contaminated land have had a high priority in most industrialised countries. Most have adopted wide-ranging programmes to identify, register, report, assess, prioritise, monitor and, where necessary, remedy polluted sites. These generally combine strict liability legal systems with encouragement of voluntary action in various forms. Particular attention has been given since the 1990s to projects which can redevelop derelict urban and industrial sites (brownfields), if necessary adjusting more general liability mechanisms to include special provisions for this. Many countries are working on quantitative and qualitative standards for specific pollutants, in forms such as guideline, trigger, investigation and intervention values or environmental quality standards (EQSs). These include both fixed numerical standards and more flexible,

risk-based or site-specific ones. Although the main work on these is at national level, there is also an exceptionally large body of international co-operation in this field, under numerous different initiatives[6]. These discuss everything from standards and clean-up technologies to policy and enforcement issues. Most seem to enjoy a high level of support from national governments. Alongside this, the last few years have seen general acceptance of use-based/function-oriented clean-up objectives as an important element in virtually all contaminated land programmes.

Biodiversity/natural resources: Increasing attention seems to be being given to biodiversity damage in many countries, alongside the development of action plans and other measures to implement the international biodiversity convention and, within the EU, the Natura 2000 network. Most countries have long had public law powers – both administrative and criminal – to intervene where designated protected sites are harmed, but these seem to have been used relatively rarely. On the other hand, even without dedicated legislative provisions, some countries (eg, France) have been requiring liable parties to address habitat and eco-system damage, at least to some extent, as part of their contaminated land obligations. A few countries (eg, the UK) have now expressly included biodiversity damage, along similar lines to those proposed in the White Paper, in their recent contaminated land regimes.

Personal injury: Personal or bodily injury is the field with perhaps the widest variation in liability standards, from countries which still rely on a traditional negligence test to those which have adopted statutory strict liability, either for all activities causing environmental harm or for various types of dangerous activity. In addition, some of the jurisdictions with strict liability for this type of damage have eased the plaintiff's burden of proving causation, while others have not. Paradoxically, these important differences do not appear to have had much effect on the incidence or success rate of personal injury claims. It is not possible within this study to determine whether they have had no effect, but anecdotally there does not seem to have been a major increase in personal injury litigation in those countries which have introduced a strict liability standard. To some extent, this may reflect an easing of the burden of proving fault in countries which have retained fault-based liability (ie, that the shift to strict liability is not that big a change) and continuing obstacles to pursuing private legal actions in the courts (cost, etc). But the crucial factor seems to be the difficulty of proving causation. Despite widespread popular belief that certain causal links exist, several factors make it difficult to prove such connections, including: (a) limited scientific understanding of the health effects of pollution practices; (b) similarly limited understanding of the conditions from which claimants are suffering, which frequently have either multiple possible causes or causes which are not adequately understood; and (c) the inability of epidemiological studies, which often have to rely on small numbers of cases, to resolve these uncertainties. The result is that personal injury claims tend to succeed only where there is evidence of overwhelming exposure to a harmful substance or event, with known health consequences. Such circumstances tend to diminish the importance of the liability standard.

[6] These include: the Contaminated Land Rehabilitation Network for Environmental Technologies in Europe (CLARINET), the Ad Hoc International Working Group for Contaminated Land, the Common Forum for Contaminated Land in the European Union, the Network for Industrially Contaminated Land in Europe (NICOLE), two pilot studies under the Committee for Challenges to Modern Society of the North Atlantic Treaty Organisation (NATO/CCMS), the International HCH (Lindane) & Pesticide Association (IHPA), and the Risk Abatement Centre for Contaminated Soil in the CEE Countries (RACE), as well as a European Topic Centre on Soil (ETC/S) under the European Environment Agency (EEA) and a Technical Committee under the International Standards Organisation (ISO TC 190/SC 7 Soil Quality).

Nevertheless, it may simply be too soon to judge the operation of the strict liability regimes in this respect (eg, Denmark, Finland, Germany, Netherlands, Sweden) – to detect, for example, changes in precautionary behaviour for fear of potential liability or case rulings which imply wider liability risks.

Property damage: With the increasing application of strict liability for property damage – under both new statutory regimes and more traditional liability rules – as well as tightening administrative law regimes on contaminated land and other damage, it seems to be getting easier to win a civil claim for property damage resulting from an environmental incident, or to secure compensation/restoration in other ways (voluntary settlement, etc).

Obligation to spend: In most jurisdictions, civil awards for compensation are not normally qualified by a requirement to spend the money in specific ways. Some awards may take the form of a restitution in kind (ie, repair of the relevant damage), but a recipient of monetary damages is usually free to use the money for whatever purpose he likes. On the other hand, in the case of property damage, where the harm at issue is environmental in nature and sufficiently serious to trigger a statutory obligation of some kind, it is now quite likely that the claimant could be subject to an administrative order to repair the damage, irrespective of any civil award he receives. A similar indirect obligation could arise if a civil claimant were to receive damages for biodiversity damage.

Financial security requirements: Few general environmental liability regimes are predicated upon compulsory financial security. Some include financial security requirements for specific sub-sectors of activity (underground storage tanks, extra-high-risk installations, waste disposal sites, coastal shipping, etc). Some of these have been difficult to implement (eg, the German Environmental Liability Act, the US Oil Pollution Act and the US RCRA Subtitle I underground storage tank regime) because of reluctance among insurers and others to meet some of the conditions (limits of indemnity, open-ended guarantees, etc). Most have, however, ultimately been implemented, if necessary with other parties providing financial support (eg, oil companies paying premiums on behalf of tank owners in Denmark and state governments underwriting excess layers of cover for small filling station owners in the US). On the other hand, no national government has withheld new liability rules simply because of the difficulty of obtaining insurance cover for the risks, nor is there evidence of liability regimes being undermined simply because many of the risks are uninsured. Widely expressed concerns on the latter point seem to be unfounded, at least on the evidence from national regimes up to now. A few countries (eg, Finland and Sweden) have established joint funding schemes, based on compulsory insurance at high-risk operations, to underwrite orphaned liabilities.

Among other significant points on financial security in recent years, the inclusion of administrative/public law mechanisms within environmental liability regimes raises an important question about the class of insurance that might be triggered by a loss on the part of policyholders. Many European liability insurers have argued that costs incurred in response to an order of a public authority are not covered under liability policies, because they do not constitute "damages" in the sense of a monetary liability under civil law, which has traditionally been part of the definition of an insured event. The same position was originally taken by US insurers in response to claims for Superfund clean-up costs. In that country, however, policyholders successfully overturned the insurers' position on this issue, in litigation brought in all the US states and territories, thereby establishing in those jurisdictions that liability insurance does cover public orders and even, to some extent,

voluntary settlements in anticipation of such orders. Most observers currently foresee European courts being more sympathetic to insurers' interpretations of their policy wordings, at least on this matter, but no one can yet be sure of that. In the meantime, the innovative initiatives in the Netherlands, and latterly in Denmark, to introduce hybrid insurance products which combine liability and property cover, specifically addressing environmental risks, may prove important in the long run, though again it is too early to assess their prospects. Another potentially important trend has been a strengthening of the commitment among most commercial insurers to avoid any new areas of unlimited cover and even, in some jurisdictions, to try to withdraw unlimited insurance from areas where it has historically been a legal requirement (such as motor and employee liability). There seems no doubt that, whatever insurance products emerge in future years to cover environmental risks, they will all be subject to limits of indemnity, regardless of any financial caps in the liability legislation. They will also carry multiple, complex exclusion clauses and conditions, with the result that, even where a liable party does carry state-of-the-art insurance cover, that will not guarantee that a particular loss is insured. Insurance is by no means the only possible form of financial security, however; at present, many of the compulsory security requirements that already exist around the world are being met by other means, such as bonds, escrow funds and finite risk products, some of which, although not involving full risk transfer, are being supplied by insurance groups.

2. EU MEMBER STATES

This section outlines recent developments in selected Member States. The nine Member States covered are: Denmark, Finland, France, Germany, Italy, Netherlands, Spain, Sweden and the UK. A short entry is also included at the end on Belgium. There is no pretence to be comprehensive; what follows are some important developments which have taken place within the last five years or so and which are intended to give an indication of trends on various aspects of environmental liability in the country concerned. Each entry begins with a few headlines.

DENMARK

- Contaminated Soil Act no. 370 of 2 June 1999
- early experience with Environmental Damage Compensation Act no. 225 of 6 June 1994
- guidance on Remediation of Contaminated Sites (September 1998)
- Act no. 447 of 31 May 2000 on access to environmental information, etc (implementing the Århus Convention)

The main legislative development in Denmark since 1995 has been the adoption in 1999 of the Contaminated Soil Act (370/99). This is a public/administrative law which replaces earlier provisions under the Contaminated Sites Act (no. 420, 13 June 1990) (also known as the Waste Deposits Act or the Contaminated Land Act) and the Environmental Protection Act (no. 358, 6 June 1991). Following persistent disputes between the Environment Agency, defendants and the courts over the reach of enforcement powers under the 1991 Act, the new law is intended, among other things, to give the public authorities stronger powers to order liable parties to clean up polluted sites. It is the result of a long period of deliberation and consultation, starting with the setting up of a Contaminated Land Committee in 1994.

The new Act will also supplement the cost recovery option provided under the strict civil liability provisions in the 1994 Environmental Damage Compensation Act (see below). Until the new remediation powers came into effect on 1 January 2001, the authorities were relying extensively on the threat of liability under the 1994 Act to persuade liable parties to conduct clean-ups voluntarily. That approach is expected to decline from the beginning of 2001, although it will remain available as a reserve power in the event of problems with the new law.

The 1999 Act is a broad-ranging instrument, covering identification and mapping of contaminated sites, restrictions on use, investigation and remediation, soil disposal and other matters. The scope of damage covered is defined in terms of "soil which due to human impact may harm groundwater, human health and the general environment". At this stage, damage to natural resources or biodiversity does not seem to be included, although it is conceivable that the category of "general environment" may come to incorporate that in the future. Virtually all activities are covered, with no restriction to those listed as dangerous or subject to other regulations. The only exclusion is agricultural spreading (sludges, fertiliser and pesticides, etc).

The mechanism for ordering remediation is through enforcement notices issued by the local or regional council (s.41). These are based on a strict liability standard. The remediation powers apply to "contamination occurring" on or after 1 January 2001. Where the contamination occurred before 2001, but also continues after it, the powers can only be used if the authorities prove that "the substantial part" of the contamination occurred afterwards (s.42(1)). There still seems to be room for interpretation of "contamination occurring" – whether it is read as the moment when damage occurred or, more widely, as the point when pollutants were released into the environment. Some observers believe that some past damage will be covered, but the history of restrictive court rulings in Denmark on these matters, combined with views expressed in the Danish parliament during the passage of this law, suggest that any retroactivity will be minor (though events from July 1994 onwards will still be subject to strict liability under the 1994 Act). Although limitation periods do not normally apply to administrative law in Denmark, but the 1999 Act includes a long-stop limitation of 30 years, not from the causative event, but from closure of the plant ("termination of the production method or use of the plant which caused or could cause the contamination").

Liability under the Act falls on the "polluter", who is defined in terms of:

(1) any party who, at the time when the contamination occurred, operated the enterprise or used the plant from which the contamination originated; or
(2) any other party who caused contamination where that involved reckless conduct or conduct subject to stricter liability rules under other legislation.

Enforcement notices for investigation of sites and remedial design may be issued against the same parties, with the difference that the qualification in point (1) above, about the time when the contamination occurred, is deleted[1]. Investigation notices can also be issued irrespective of when the contamination occurred; ie, they are not limited to future pollution. These powers came into force with the Act itself, on 1 January 2000.

There are two specified defences to remediation orders: first, war, civil unrest, nuclear damage or natural disaster; and second, fire or criminal damage where the resulting harm was not caused by either reckless conduct on the part of the polluter or conduct subject to stricter liability rules elsewhere. There is also a *de minimis* exemption (see "insignificant proportion" below) and what amounts to an innocent owner, innocent successor defence (see below).

The rules for apportioning liability at multi-party sites is one of the relatively few attempts to establish something like proportionate sharing on a formal basis, as opposed to the more common practice of using joint and several liability to achieve proportionate sharing. It is not a purely proportionate system, however, nor is it simple. The basic rule is that enforcement notices should be served on all the liable parties, with proportionate sharing where the authorities are able to assess each party's respective contribution to the damage, or equal shares where they are not. In the latter case, the wording suggests a possibility of including orphan shares ("the contamination which cannot with certainty be attributed to one or more polluters") in those equal shares, whereas such orphan shares will not be added to

[1] It is understood that this provision, in s.40, has been amended following a Supreme Court judgment in a case involving Shell (UfR 1999.1600), with the new provision limiting the power to contamination arising after 1 January 1992 and some observers speculating that the cut-off date might be as late as 1 January 2000.

the liability of parties whose relative contributions can be assessed. That remains to be seen, however. There is an exemption for polluters who contributed only an "insignificant proportion" of the contamination. The authorities also have discretion to serve the enforcement notice on a single polluter in two circumstances:

- where the liability has been assigned proportionately, but the liable parties can not agree jointly to comply with the enforcement notices, a new notice can be issued to the largest contributor;
- where the liability has been attributed equally, the notice can be served on the one who has disposal of the property or, in the event that none of them currently have such control, the one who last had disposal.

Any party complying with a notice served under one of those two provisions is given a statutory right to seek contribution from the other liable parties[2].

The Act provides that liability for remedial action, including any follow-up action that the authorities deem necessary, passes to subsequent operators and purchasers of the land, under differing rules. In the case of purchasers, liability is subject to (objective) knowledge at the time of acquisition that a notice had been, or was due to be, served, and the purchase also being from a seller who was himself the subject of the original enforcement notice.

On the other hand, a broader system of appeals is established than was available under the previous administrative regimes. Complaints and appeals will go through three stages: the local or regional authority, the Environment Agency and the Environmental Appeals Board.

A separate set of rules applies under the 1999 Act to domestic heating oil tanks with a capacity of less than 6,000 litres. Here, the owner of the tank is strictly liable – through an enforcement notice procedure as above – for remediation of any oil contamination originating at the tank which is discovered after 1 March 2000. Specifying discovery as the cut-off point for these cases means that releases of pollutants before that date are not excluded from the regime, unless the resulting contamination was recorded by then. Such owners are also obliged to take out insurance against these potential costs, up to a limit of DKK 2 million (euro 267,913), with the public authorities responsible for costs above that amount. Insurers are denied the right to terminate cover until other insurance has been taken out, but are given a statutory right of debt collection for unpaid premiums, including a charge on the insured property (second only to property taxes). A practice has developed of oil supply companies paying the insurance premiums on behalf of tank owners. The threshold was set at 6,000 litres because most tanks above that size are subject to the strict civil liability rules of the 1994 Environmental Damage Compensation Act.

The 1994 Act introduced strict liability under civil law for damage brought about by pollution of air, water, earth or underground strata, and for nuisance caused by noise, vibration or similar phenomena. The regime is restricted to commercial activities listed in an Annex, which includes a wide range of things from steel works and chemical plants to airports, animal manure handling, amusement parks and most oil tanks above 6,000 litres. This is interpreted narrowly to mean that the harm must arise from the aspects of an activity which underlie its inclusion on the list. The types of damage covered are personal injury,

[2] In fact, the apportionment rules in multi-party cases are more complicated, but the significance of the complications is hard to gauge because such cases are relatively rare.

property damage, economic loss and the "reasonable" costs of restoring the environment. This seems not to include damage to natural resources or biodiversity. The specified defences are: compulsory order of a public authority and deliberate or negligent contribution of the plaintiff (gross negligence in cases of personal injury, simple negligence for property damage). Nuclear damage is exempted. The regime came into force on 1 July 1994 and applies only to "damage which is caused" after that date. There are limitation periods of 5 years from discovery and 30 years from the causative event. The Act is silent on apportionment and up to now there seem to have been few cases involving multiple defendants, but the traditional principle under Danish civil law is joint and several liability.

At the time of the 1995 study, this Act was too new to show how it would work in practice. Since then, a few early trends are reported. First, the amount of litigation among private parties has so far been small, especially claims for personal injury, of which hardly any are detected. Second, the law has been used extensively by public authorities as the basis for convincing polluters to undertake voluntary clean-ups – an approach which is expected to fall away once the 1999 Contaminated Soil Act powers come into force (see above). The 1994 Act provides only for cost recovery once clean-up activities have been carried out or actual losses incurred. Such provisions in other countries have deterred authorities from conducting clean-ups or other response actions in advance, for fear of losing the civil action afterwards and not recovering their costs. In Denmark, however, the Act's liability standard seems to be sufficiently clear to persuade liable parties that they would lose a recovery action and that it would therefore be better to conduct the clean-up work themselves in advance. Industry representatives, who criticised the strict liability standard at the time of the law's preparation, appear to be less concerned now that it is working. Some environmental campaigners, on the other hand, seem to feel that the law is too narrow to give adequate protection from environmental harm.

Other notable developments include:

(a) the publication in September 1998 of new statutory guidance on Remediation of Contaminated Sites. This came in the context of a sustained programme of identifying and registering sites which has been going on since the early 1980s and the building since 1990 of a national inventory of sites, based on past uses, physical investigation and risks in relation to future site uses. The new guidance provided updated rules for management of contaminated sites, including risk assessment and implementation of remedial action. Topsoil and groundwater quality criteria for some 50 substances, based on human toxicity, are provided, together with a new guideline value, known as a "cut-off value" (a threshold below which remediation is not necessary), and more detail about substances with chronic or acute toxic effects.

(b) the passage of Act 447/2000, which implements the Århus Convention into Danish law. This will allow NGOs wider legal standing in the administrative appeals process. Some observers believe that, based on an earlier precedent, that may lead to wider standing in civil court. Hitherto, such access to justice has been relatively narrow in Denmark.

(c) the launch of a new, integrated, environmental insurance package similar to one introduced previously in the Dutch market. This will combine aspects of what have hitherto been separate liability and property insurance policies, providing First Party, as well as Third Party, cover, up to an initial limit of DKK 100 million (euro 13.4 million). The intention is to clarify and improve insurance cover, including the costs of restoring

the insured's own site and avoiding potential gaps which have been identified in the past between liability and property covers. It is at an early stage, however, and it remains to be seen how well the product is received in the market.

(d) continued operation of a nationwide programme of voluntary remediation of petrol filling stations, under the auspices of a Danish Oil Industries Environmental Clean-up Association, whose council contains both oil companies and the environmental authorities and is chaired by the Director of the Environmental Protection Agency. This has been in progress since 1992. It is funded by a levy set at DKK 0.05 (euro 0.007) per litre on petrol sales from 8 oil companies, which generates about euro 22.5 million a year. The Council expects around 7,000 sites to be notified as requiring investigation and potential clean-up and it is expected to take 15 years or more to complete the task. Over 1,000 sites have already been examined and cleaned up. The average cost in 1998 was approximately euro 73,000 per site, with the most expensive reaching euro 2.1 million[3]. As in other countries, the average cost is falling for two reasons: because the most difficult sites were being dealt with first and because of greater efficiency as a result of experience and improved clean-up methods.

FINLAND

- Environmental Protection Act (86/2000)
- early experience with the 1994 Environmental Damage Compensation Act (737/1994)
- Environmental Damage Insurance Act (81/1998)

The most important change in Finland since 1995 has been the entry into force on 1 March 2000 of the new Environmental Protection Act (86/2000). Chapter 12 of this Act introduces a new public/administrative law regime for contaminated soil and groundwater, replacing and supplementing what were previously separate provisions under waste and water legislation.

The regime imposes on any party whose activities have caused pollution, or on the site holder, a duty to restore the damaged soil or groundwater to a condition that will not cause harm to health or the environment or represent an environmental hazard. The duty is on a strict liability basis. This is not restricted to any list of dangerous or potentially dangerous activities. In principle, it applies only prospectively (ie, to events arising after the Act's entry into force), with earlier contamination handled under the Waste Act (1072/1993) or the Waste Management Act (673/1978). Some doubt has been expressed, however, about the effectiveness of this exclusion of old contamination.

The 1993 Waste Act includes a requirement to notify the environmental authorities when soil contamination is found, a duty on the polluter to clean up the soil and an obligation on

[3] These euro figures derive from a report in the Danish EPA publication, *DanishEnvironment* (Issue 7), which uses US dollars: US$ 20m aggregate revenue, US$65,000 average site cost and US$1.9m most expensive.

the vendor or occupier to provide the purchaser with information on contamination or possible contamination at the relevant site.

The new Act is intended to bring together the obligations which existed under separate laws and lay down explicitly what the responsible party must do when pollution occurs. The remediation duty which it imposes falls initially on the party which caused the pollution – apparently by act or omission, although that is not specified. If that party can not be identified or found, or is unable to carry out the remedial action, the obligation passes to the holder (owner, occupier, etc) of the site, provided this is not clearly unreasonable, and as long as one of two other conditions is met: (a) the pollution occurred with the holder's consent or (b) the holder knew, or should have known, of the presence of the pollution when he acquired the site. If the holder can not be required to clean up, then the local authority is obliged to assess the need for remedial action and to carry it out, with the possibility of cost recovery from liable parties at a later date.

Apart from the pre-conditions for holder liability described above (effectively, reasonableness and lack of knowledge), no defences are specified. Nor is there any mention of apportionment rules, but the general principle under Finnish law is joint and several liability. Compensation claims under civil law arising from activities governed by the 2000 Act are subject to the 1994 Environmental Damage Compensation Act (see below).

The regional environmental centre is required to order response action if the relevant liable parties fail to do it. The Act also contains provisions on: notification and investigation of contaminated land; permitting of remedial operations; monitoring of Third Party land; orders to prevent pollution or suspend operations; post-closure site supervision; and access to justice. Under the last of those, legal standing for certain aspects of the regime is extended to registered environmental associations whose sphere of operation relates to the environmental effects concerned (s.92 (2)). That access to justice provision coincides with a wider trend in Finnish environmental law, including an opening up of the land use planning system to public participation under a proposed new Land Use and Building Act, which was submitted to Parliament in 1998.

The Environmental Protection Act deals also contains a broad definition of "environmental pollution", and a series of general principles, duties and prohibitions, including: the polluter pays principle ("It is the duty of parties engaged in activities that pose a risk of pollution to prevent impact and eliminate or minimise harmful environmental effects"), the prevention and precautionary principles, a "knowledge requirement" ("Operators must have sufficient knowledge of their activities' environmental impact and risks and of ways to reduce harmful effects"), and prohibitions against pollution of soil, groundwater and the sea.

The soil pollution prohibition, like the other two, is broadly worded to the extent that it seems to override conditions set out in operating permits: "Waste or other substances shall not be left or discharged on the ground or in the soil so as to result in such deterioration of soil quality as may endanger or harm health or the environment, substantially impair the amenity of the site or cause comparable violation of the public or private good".

The environmental pollution definition is more detailed than in some other jurisdictions. It includes: harm to health; harm to nature and its functioning; prevention or material hindrance of the use of natural resources; reduction in the general amenity of the environment or in special cultural values; reduction in the environment's suitability for

recreational purposes; property damage; or comparable violation of the public or private good. It appears that this will cover damage to biodiversity or natural resources in the form of habitats and eco-systems.

The Environmental Damage Compensation Act (737/1994), which came into force on 1 June 1995, provides for strict liability under civil law for personal injury, property damage, pure economic loss (provided it is not slight) and environmental damage, which occurs through: water, air or soil pollution; noise, vibration, radiation, light, heat or smell; or any similar nuisance. Its application is not limited to dangerous or otherwise listed activities, although liabilities covered by international regimes, such as nuclear damage and marine oil spills, are excluded. The rules only apply to damage caused by activities occurring after its entry into force, even if the damage is discovered after that date. The law does not apply to damage covered by other liability legislation, with certain qualifications, one of which is that it applies additionally to any compensation available under the Product Liability Act (694/1990).

Liability under the 1994 Act is assigned to the person whose activity has caused the damage, anyone else who is "comparable" to that person (defined in terms of powers of decision, economic relation or economic benefit), and any successor to the activity if they knew or ought to have known of the damage at the time of transfer. Multiple parties are jointly and severally liable where their activities have, on the balance of probabilities, inseparably caused the damage. That is subject to two qualifications: protection for *de minimis* parties (those whose share in causing the damage was "obviously slight"), whose liability is limited to a proportionate share; and a requirement, if nothing else is agreed, to share liability among the larger contributors according to what is reasonable, in the light of the basis of liability, the possibilities of preventing damage and general circumstances. The only specified defence, apart from the conditions described above, is that the nuisance is tolerable given local or comparable circumstances, although that is not available for personal injury cases or for property that is "not slight". Some observers believe that general defences such as *force majeure*, act of God, act of war, etc, are also available. There is no state-of-the-art defence and any defence in terms of intervention of a Third Party is likely to be construed narrowly by the courts. In addition to the costs of investigation, mitigation or restoration resulting from the damage, liable parties are also obliged to purchase polluted land from the owner, if so requested by him, if that land has become wholly or partly useless, or significantly more difficult to use.

Initial experience with this 1994 Act suggests that its scope will be interpreted widely by the courts. In its first judgment under the law, in a case involving dust from a sand-blasting operation that caused damage to a parked car and respiratory injuries to its driver (no. 124 of 1999), the Finnish Supreme Court ruled that the Act applied to both claims and awarded damages to the plaintiff on both counts. A defence in terms of contributory negligence on the part of the plaintiff (failure to attend a doctor or clean the car sooner) was rejected. Among other cases proceeding in the lower courts are claims for noise disturbance from neighbours of a dog kennel and a property damage claim from a fox-fur farm against an operator of low-flying aircraft. On the other hand, there have not been a large number of personal injury claims, nor does there appear so far to have been any significant disruption to industry. Equally, there have not yet been claims for damage to habitats or eco-systems, although some observers believe such claims will be covered as a form of restoration of the environment, despite ambiguous wording in the law.

Following prolonged consultation with interested parties on possible mechanisms to underwrite liabilities under the 1994 Act for which there is no identifiable or solvent liable party, the Environmental Damage Insurance Act (81/1998) came into force on 1 January 1999. The objective is to guarantee full compensation for orphaned liabilities under the 1994 Act. It establishes a compensation fund, run by commercial insurance companies and financed out of compulsory insurance premiums paid by companies whose activities are subject to an environmental operating permit. The obligation has been introduced in two phases: first, it applied only to larger companies regulated at regional level (estimated at 1,000-1,500 companies); then, with the arrival of the 2000 Environmental Protection Act, it is extended to small and medium-sized companies regulated at local level (about 30,000 companies). Annual premiums are expected to range between FIM 1,000 and FIM 300,000 (euro 168 – euro 50,457), depending on the scale of operation and degree of risk. The intention is to raise around FIM 20-30 million (euro 3.4-5.0 million) per year. Maximum compensation is limited to FIM 30 million. The provisions apply only to damage occurring after the Act's entry into force. There have so far been no claims against the fund.

Meanwhile, a wide-ranging, national contaminated land programme has been going on since the 1980s. Some 20,000 sites have been identified as potentially contaminated and are being investigated. About 1,000 urgent sites have been cleaned up, mostly with private funds. Preliminary guideline values for 170 compounds were published by the environmental administration some years ago, and the Environment Ministry has been working on updated soil quality guidelines, some of which were included in guidance published in 1998.

FRANCE

- further development of a national contaminated site remediation programme, including site inventories, a standardised risk assessment procedure and preparation of guideline values for selected pollutants

- substantial case law on contaminated sites, both civil and administrative

- series of Ministerial circulars on rehabilitation of contaminated sites (3 April 1996, 7 June 1996, 1 September 1997, 27 January 1998, 31 March 1998 & 10 December 1999)

- introduction of a General Tax on Polluting Activities (TGAP) to fund public remediation work at orphan sites

- Act no.99-245 of 30 March 1999 on liability for damage resulting from mining activities and prevention of mining risks after closure

While there have been no major legislative changes in this field in France since 1995, considerable work has gone into further development of the national contaminated site remediation programme launched in 1993, a substantial amount of case law has been generated around this and a series of working groups have been set up to examine aspects of the programme.

Some legislation has emerged during this period. A long-awaited Environmental Code was adopted on 18 September 2000, incorporating 39 previous laws and one Book (Book II) of the Rural Code. This is a consolidation of existing law, however, leaving the environmental liability position substantially unchanged. More pertinently, a new law concerning damage caused by mining was passed in March 1999. This parallels the approach of the 1976 classified installations law (no. 76-663 of 19 July 1976) on which the contaminated site programme is largely based, but addresses specifically mining problems, such as subsidence, flooding and post-closure care. A more general tax on polluting activities (TGAP) was also introduced in 1999, replacing a smaller scheme, based on special wastes, launched in 1995. The tax is being used to finance the remediation work done by the national environment agency, ADEME, at orphan sites.

France does not have specific legislation addressing the core aspects of environmental liability. Nevertheless, since the publication of a key Ministerial circular in December 1993, the French authorities have pursued a vigorous programme of identifying and cleaning up polluted sites. This has relied mainly on the 1976 law on classified installations and, to a lesser extent, a 1975 waste law (no. 75-633 of 15 July 1975), as amended by a 1992 law (no. 92-646 on waste disposal and classified installations). All of these are administrative laws, based on a strict liability standard. Further provisions on financial guarantees from high-risk installations were added in a Decree of 9 June 1994 and the whole regime has been supplemented by numerous pieces of secondary legislation, in the form of decrees and circulars. The latest of these was a Ministerial circular of 10 December 1999 on contaminated sites and soils, and the principles for determining remedial objectives. Other provisions were added within the so-called Barnier law in 1995 (no. 95-101 of 2 February 1995 on reinforcing protection of the environment), which emphasised the polluter pays principle and provided the legal foundations for the system of taxes on industry to fund public remediation of orphan sites.

Another potentially important provision within the Barnier law was a marked widening of access to justice for environmental groups. As well as greater participation in public decision-making, the law granted legal standing to groups meeting specified conditions (*les associations agréées de protection de l'environnement*), both to sue in civil court and to bring actions in administrative court if the public authorities fail to respond within a time limit (four months, reducing to two months in 2001) to a request for enforcement action.

Private actions for civil remedies, meanwhile, have had to rely on provisions of the Civil, Rural and other Codes, or on other legal principles. These contain a mixture of strict and fault-based liability, with strict liability playing an ever-greater role in this field as the courts impose increasingly precautionary responsibilities on commercial defendants.

Because the underlying laws were not originally designed to deal with contaminated land or environmental damage in general, ambiguities and anomalies have arisen in case law. The courts have had to try to adapt provisions intended for other purposes. Consideration has been given for several years to the possibility of new legislation to clarify the position, but the current preference seems to be to adapt the existing legal framework, rather than replace it.

The most prominent of the working groups established at national and regional level to review current legal provisions and explore options for the future is probably the one presided over by the Engineer General of Mines (M. Jean-Pierre Hugon) and the Inspector

General of Finance (M. Pierre Lubek). This was set up at the behest of the Economics, Finance and Industry Minister and the Environment Minister, consulted a wide range of interested parties and produced a report in April 2000 (sometimes referred to as the Hugon-Lubek report). Another widely-known group is a Think Tank set up by the regional authorities in Nord-Pas-de-Calais, to look especially at the issue of redeveloping old industrial sites (brownfields).

Among the many developments emerging from case law in recent years are the following:

- liability for remediation may fall on unauthorised, as well as authorised, operators, despite the 1976 classified installations law containing no formal provisions for this;
- in cases involving a succession of operators at a site, the last operator will normally be held liable, but predecessors may also be sought by the authorities, especially where succession has not been properly declared;
- site owners may be held liable where the responsible operator is insolvent, but court rulings differ on the precise boundaries for owner liability (see below);
- there are few problems of apportionment between large numbers of liable parties, because the authorities normally have to choose only between the (last) operator and the site owner or holder, at least under the classified installations law – the 1975 waste law might give rise to more complex questions, since it allows waste producers to be held liable if they have consigned waste to a disposer improperly;
- the position of remediation orders in the context of bankruptcy proceedings remains unresolved; discussions between receivers and Ministers led to the former issuing a guideline in March 1999 concerning actions to be taken at polluted sites;
- similar uncertainties have arisen in relation to redevelopment of derelict sites, either through compulsory purchase (expropriation) by the state or in the private market (see below);
- damage to natural resources (flora and fauna) is now routinely investigated and addressed in remediation orders, and eco-systems are included among the core receptors considered in the national risk assessment procedure;
- under civil law, there seem to have been an increasing number of cases concerning environmental incidents, mostly against site owners, often on a strict liability basis, with the courts taking a strong view of precautionary responsibilities;
- claims against site owners for strict liability in nuisance (community disturbance) are increasing, although their efficacy may be limited by, among other things, Art. L.112-6 of the Construction and Housing Code which excludes such claims where the plaintiff has moved into a site next to a pre-existing installation whose operations remain unchanged and within statutory regulations;
- claims for strict liability under Art. 1384 clause 1 of the Civil Code (guardian responsibility), also normally targetted at site owners, may in environmental cases be brought against the last operator of a polluting site, or against the current owner if it can be shown that the latter assumed knowledge and control of the problem at the time of transfer; as far as classified installations are concerned, this position was simplified by inclusion of an information disclosure requirement in the law of 13 July 1992 (inserted in 76-663 as Art. 8-1) – under this article, failure to make adequate disclosure allows the purchaser to demand annulment the sale, recovery of part of the sale price or remediation of the site at the seller's expense;
- the burden of proving fault under Art. 1382 of the Civil Code is becoming easier, insofar as defendants are sometimes required to prove their compliance with statutory

obligations (such compliance is necessary, but not in itself sufficient, to establish absence of fault);

- the burden of proof of causation in guardian responsibility cases has been considerably eased under senior court rulings to the effect that, once the plaintiff has provided evidence that the relevant disturbance could not have been caused by any other identifiable source, it then falls on the defendant to show an alternative explanation.

The question of the liability of owners, or more generally holders, of sites under administrative law has played a key part in recent debate. Much attention has been given to two senior court judgements in 1997, which appeared to contradict each other. The first ruled that ownership alone was not a sufficient basis for the serving of a remediation order (CE, 21 February 1997, *Société Les Peupliers*). Shortly afterwards, another court decided that an owner, as guardian-possessor, could have such measures imposed on him where no solvent operator remained (CAA Lyon, 10 June 1997, *M. Zoegger*). The difference appears to have revolved around the principle of purchasing a site with knowledge of existing contamination and perhaps at a discounted sale price. This has been discussed elsewhere around the concept of "innocent" ownership.

One of the concerns has been about the frequency with which the authorities have served orders on owners and the potential effects of this on the property market. This was a central issue in the Hugon-Lubek report. In principle, there are no formal exemptions for site developers and purchasers who wish to do physical work with a view to bringing it into a useful condition. It seems that local enforcement authorities (DRIRE) are willing to reach voluntary agreements with such parties but, as in other countries, their legal position appears to be very unclear; for example, in the event of new pollution being discovered or arising. There is continuing discussion about policies to address this brownfields issue.

Aside from these legal and policy issues, the contaminated site programme has had the effect of focusing minds on the issue within the property market. No major property transaction seems now to take place without full consideration of this risk; information and warranties are routinely sought by purchasers. This has given rise to a series of other issues in case law concerning contractual liabilities, such as hidden defects and flawed consent.

One measure of the scale of the programme is the growth in the numbers of sites registered on the different inventories. The smaller one, BASOL (*Base de données des sites et sols pollués*) now contains over 3,000 contaminated sites classified according to the stage they have reached in the remediation process. Over half of these are found in five of the country's 25 regions (Nord Pas de Calais, Île de France, Rhône Alpes, Lorraine and Aquitaine). The first such list under the new regime, published in December 1994, contained only 669 sites. The wider inventory, covering historical uses of land (*Inventaire historique régional (IHR)*) and collected in a database known as BASIAS (*Banque de données des anciens sites industriels et activités de service*) is expected to include about 400,000 sites by the time it is completed, around 2005.

Alongside this process of identifying and registering sites, considerable work has gone into a new national approach to risk assessment, including a scoring system based on the three elements of source, pathway and receptor, and progressively more invasive site investigation where initial data warrant it. Clean-up standards (both trigger and target levels) are based on current and future uses of the site and its surroundings, with four receptors considered: humans, water resources, eco-systems and buildings. Remedial objectives are intended to be

both economically and technically realistic but, in order to police use-based requirements, administrative tools are being included to freeze future use of a site and require a new risk assessment if a change to a more sensitive use is proposed. Specifically French guideline values and thresholds for soil contamination are being developed, with provisional values based on practice in other countries used in the meantime.

Among other interesting aspects of the French liability system, administrative actions are not subject to limitation periods, whereas civil claims must be brought within ten years of discovery or aggravation of the relevant harm, and the enforcement authorities are not protected by legal immunity.

GERMANY

- Federal Soil Protection Act (Bodenschutzgesetz (BSG)) (17 March 1998)
- Federal Soil Protection and Contaminated Sites Ordinance (BSV) (12 July 1999)
- experience with the Environmental Liability Act (10 December 1990) (Umwelthaftungsgesetz (UHG))
- continued work on identification, registration and remediation of contaminated sites

The main development in Germany since 1995 is the adoption in March 1998 of the Federal Soil Protection Act (BSG). This law was the result of several years of consultation with a wide range of parties. Most of it came into effect on 1 March 1999. Further detail on the implementation of this Act was given in the subsequent Soil Protection & Contaminated Land Ordinance (BSV) of 13 July 1999.

The BSG is intended to provide a uniform national system of rules for soil protection and clean-up of contaminated sites, where previously this was largely regulated at state (*Land*) level and differed from state to state. The Act is a public law measure which sets prevention, remediation and other duties for specified responsible parties, on a strict liability basis. It covers harm to soil, other elements of the land and consequent damage to ground- and surface water. "Harmful soil changes" are defined in terms of "harmful impacts on soil functions" which can result in "hazards, considerable disadvantages or considerable nuisances for individuals or the general public". All activities are subject to the law, including private activities. Remediation includes removal or reduction of pollutants ("decontamination"), containment of pollutants and elimination or reduction of harmful soil changes. Both the soil and any consequent water pollution need to be addressed. Impacts on the soil that are regulated by a series of other laws – aspects of the Closed Substance Cycle and Waste Management Act, the Fertiliser Act, the Genetic Engineering Act, the Federal Forest Act, the Federal Mining Act, the Federal Immission Control Act, and other specified provisions – are excluded from the regime, as are nuclear and certain military weapons matters.

There is a general obligation on anyone whose actions affect the soil to avoid harmful soil changes, and a specific obligation on owners and occupiers of land to prevent such damage

originating from their property. Liability for remediation of harm falls on the party causing the harm, and his successor, and on current or past owners or occupiers of the relevant site. This represents an extension of the liability net compared with previous regulations. The liability of the successor of the polluter was subject to dispute, in the context of various state laws, but is now clearly asserted at federal level. It appears that pure asset transfers are not, in principle, covered by this, although presumably they might raise questions of corporate evasion. Secondly, earlier rules targetted only the current owner, as the holder and guardian of property, whereas the BSG specifically draws in former owners, on three conditions: (a) that they transferred the property after 1 March 1999; and (b) that they knew or should have known of the relevant harm; unless (c) they were convinced at the time when they bought the property that no harm was present, and that belief is worthy of protection given the circumstances of the case. Point (c) is effectively an innocent owner defence, covering past owners, but not present ones. There is a separate provision (s. 25) which, in cases of publicly-funded clean-up, requires the current owner to compensate the authorities for any increase in the value of his land.

The apportionment rule is also something of a departure from earlier administrative law in this field. It is a form of joint and several liability (*Gesamtschuldner*), defined in terms of a right of compensation or contribution from other liable parties. Such compensation claims are limited to a period of three years from either: (a) cost recovery by a public authority which has conducted the remedial work itself; or (b) completion of the work by a responsible party and discovery by that party of the identity of the other liable party – the latter discovery being subject to a long-stop limitation of 30 years from completion of the work. Although joint and several liability is an established principle of German law, under previous law in this field the public authorities were entitled to require one of the responsible parties to do the work, without that party having a statutory right to reclaim costs from other responsible parties. Contribution claims could be made under civil law, but such claims were often time barred, unless there was evidence of fraudulent misrepresentation. The BSG provision protects and enlarges the right of contribution.

Like many administrative environmental laws, there are few defences against liability. Section 4(5) allows the remediation objective to be reduced from full elimination to less onerous measures, such as containment, where (a) at the time the pollution was caused, the defendant did not expect harm to occur because his actions were within the legal requirements and (b) his good faith is worthy of protection, taking account of the circumstances of the case. Without that protection, the normal clean-up objective is elimination (ie, full removal) of pollutants or harmful soil changes, where that is deemed reasonable in the context of pre-existing pollution. The only other defence specified in the BSG is the innocent owner defence available to past, but not current, owners and occupiers, as outlined above. Beyond that, defendants can seek protection from two general principles: that of proportionality and that of discretion on the part of the competent authorities.

In conjunction with the July 1999 Ordinance (BSV), the BSG has laid the foundations for a system of uniform national criteria for contamination, where previously there were differing local lists. Action, trigger and precautionary values have been set for different pathways (soil-human being, soil-plant, soil-groundwater, etc), initially for 12 substances, with more to come. An important objective here is to increase the level of certainty in future transactions, by: (a) removing the suspicion of contamination from less contaminated areas, where the amount of harm does not warrant intervention, so encouraging redevelopment; and (b) providing a basis for accurate assessment of clean-up requirements in more seriously

contaminated areas. The states (*Länder*) will retain some discretion to adopt their own regulations for cases of widespread damage and for aspects of the soil information systems. The BSG introduces a wider system for identification, investigation, evaluation and monitoring potentially contaminated sites, allocating responsibilities between the local authorities and the responsible parties. This has been introduced alongside complementary changes to the Federal Building Code and the Federal Regional Planning Act, to integrate the new soil regime within the physical planning process.

The BSG regime appears to have brought an increase in the number of agreements between authorities and responsible parties. The law allows a form of clean-up contract to be submitted by the responsible parties, for approval by the authorities within the terms of the law. If such a contract can be agreed, the authority withholds any administrative order. Other potentially responsible parties must be informed of the proposed agreement, however, and are entitled to challenge its terms. Early experience seems to suggest that the new regime provides greater simplicity by doing away with what previously could be a mass of municipal, district and other local laws. At the same time, the rules are in some ways tougher and less flexible than in the past, when there was more scope for doing deals with local authorities.

Behind the new regime, Germany has continued to develop its long-standing programme of identifying and registering contaminated sites. By November 1998, the inventory of suspected contaminated sites had reached a total of 304,093. Of these, 106,314 were abandoned waste disposal sites and 197,779 were abandoned industrial sites. The figures exclude military and armament production sites. Under the aegis of the programme, a series of reports have been published since 1995 on specific aspects of site remediation, including: self-monitoring and supervision for suspected contaminated sites, brownfields redevelopment, former military sites and remediation of lignite mining areas.

Alongside this, there has now been a longer period to assess the implications of the 1990 civil liability law, the Environmental Liability Act (UHG), which came into force on 1 January 1991. This Act covers harm to persons and property as a result of pollution incidents from industrial and commercial installations. The liability standard is strict and joint and several (proportionate liability was considered, and rejected, during the law's preparation). The burden of proof on causation is alleviated by means of a rebuttable presumption, subject to the circumstances of the case, but that alleviation does not apply if there was no disruption of normal operations (*Normalbetrieb*) at the plant. Liability is limited financially to a per event maximum of DM 160 million (euro 81.8 million) for personal injury and the same amount again for property damage. There are defences in terms of *force majeure* and contributory negligence of the plaintiff; there is also a further defence applying only to property damage cases, in terms of tolerable levels in the light of local circumstances, provided there was no disruption of the plant's normal operations. In contrast to the (public law) BSG, the UHG's application is confined to a list of specified dangerous installations (Annex 1, based on the installations subject to permitting under the Federal Immissions Control Act). High-risk installations listed in a second annex (Annex 2) are required to hold financial security up to the specified limits.

That financial security obligation has not yet been implemented, however, because discussions between the authorities and the German insurance market on this remain unresolved. On the other hand, since the early 1990s, German insurers have effectively transferred most significant risks into new environmental impairment liability (EIL) policies,

specifically developed to cover the liabilities arising under the UHG. Those EIL policies were the result of intense negotiations between industry and insurers. They replaced earlier policy forms covering either liability under the Water Resources Act (WHG) (available since 1961), an older EIL policy covering environmental liabilities outside the WHG (since 1979) and environmental cover available incidentally under general liability insurance policies.

There were considerable disagreements between insureds and insurers about the provisions of the new EIL policies, a key bone of contention being cover for normal operations. In the end, a compromise was reached under which the policies effectively exclude losses arising from normal operations, unless the insured can show that the relevant damage could not have been foreseen given the state of technical knowledge at the time (the so-called "savings clause", *Öffnungsklausel*). The policies are also written with a more restrictive coverage trigger – first verifiable discovery – rather than the occurrence wordings of the old policies, but the effect of that is softened by relatively generous clauses on pre-existing pollution and extended reporting following termination of the cover.

So far, there has been comparatively little litigation under this law, particularly on personal injury. There does not seem to have been a dramatic change in the legal climate as a result of the UHG, as some people feared before its adoption. There have been property damage claims, but most appear to be settled with the backing of the new EIL insurance policies. The continued postponement of the compulsory insurance requirement does not seem to have been a critical factor up to now, as the new policies appear to give adequate cover for the incidents that are occurring. That is not to deny, however, that a major accident in the future might test this system to its limits. At the same time, the effectiveness of this arrangement is undoubtedly helped by the tradition in the German insurance market of exceptional continuity of contracts with particular insurers, which is not the position in some other countries.

Cases of damage resulting from activities which are governed neither by the UHG – ie, not listed in its Annex 1 – nor by the Water Resources Act (WHG) – which imposes strict liability for damage to water – continue to be subject to liability under the German Civil Code (BGB), which in most cases requires proof of fault. The burden of proving fault, however, appears to be easing significantly, as the courts impose very tight standards of care on defendants, in line with trends in other countries.

Permit compliance is not a defence under German environmental law, except in very rare cases where a water or other emissions permit specifically allows the relevant damage to occur. The inclusion of normal operations within the scope of the UHG makes this basic position clear. A permit does not give immunity from liability for harm to the environment, although it may be considered as a mitigating factor in fault-based liability cases. Similarly, there is no state-of-the-art defence under German environmental law, although state-of-the-art conditions can be an important element in disproving fault. Even the Genetic Engineering Act (GenTG) does not provide a state-of-the-art defence. The only defence specified under that act is evidence of alternative causation, although the principles of proportionality and discretion also apply.

Among other recent developments in Germany, in September 1997, an independent committee of experts, appointed in 1992, presented a draft of a uniform Environmental Code which, among other things, included proposals for more preventive measures and for greater public participation in environmental decision-making. The Federal Environment Ministry

presented a draft for Book 1 of the Environmental Code in April 1999. A revised Nature Conservation Act was enacted in September 1998, although this largely consisted of transposing EC directives. A new system for risk assessment of contaminated sites (the UMS system) was launched in February 1998 and a practical guide for municipalities and engineering companies on clean-up of abandoned armaments sites was published by the Federal Environment Agency in December 1999. Meanwhile, the Agency placed an enhanced emphasis on the problems of environment and health when publishing its 1999 Annual Report, in June 2000. This pointed to problems such as air pollution, infectious diseases, water pollution and noise, and observed that almost a quarter of the German population assumes that serious health damage is due to environmental problems and nearly two-thirds of those surveyed were worried that the next generation would be seriously affected by environmental factors.

ITALY

- Legislative Decree 22/97 (5 February 1997) (Ronchi Decree or Waste Management Act)
- Ministerial Decree 471/99 (25 October 1999) (remediation of polluted sites)
- Legislative Decree 160/00 (16 June 2000) (postponement of deadline concerning remediation of polluted sites)
- Law no. 426/98 (9 December 1998) (new initiatives in the environmental field)
- Co-ordinated work programme on contaminated sites between National Agency for Environmental Protection (ANPA) and regional environment agencies

The main change in Italy since 1995 has been the introduction of a new, public law regime for addressing contaminated sites under Article 17 of the Ronchi Decree (22/97) (also known as the Waste Management Act), passed in February 1997. The regime came into force on 16 December 1999, following a Ministerial Decree in October of that year (471/99) which set out detailed provisions, some of which were later amended under further legislation, including a Legislative Decree in June 2000 (160/00) postponing a key deadline.

Under Art. 17 of 22/97, anyone who causes land, surface or groundwater to exceed statutory contamination limits, or a significant and imminent threat of such harm, is obliged to pay for remedial action to make the site safe, to clean up the pollutants and to restore the environment (*messa in sicurezza, bonifica e ripristino ambientale*). That party is also required to notify the local authorities of the problem immediately and of initial safety measures within 48 hours, and to submit a remedial plan within 30 days. The remedial objective is full reinstatement of the environment, but where that is not possible using best available technologies at an affordable price (*a costi sopportabili*), various forms of containment, institutional controls and land use restrictions are allowed as an alternative. In cases where the responsible parties either do not undertake the action or can not be identified, the local or regional authorities are required to do it themselves, with the option of setting up contingency funds for that purpose. In such cases, the authorities can impose a first charge on the land which takes precedence over all other charges, including mortgages,

and remains in place even if the land is subsequently acquired by new owners. There are also penal sanctions for non-compliance by responsible parties.

Effectively, this system makes the causer of the damage the primary liable party, with the site owner liable if the polluter can not be found or made to pay. It is not clear how broadly the concept of causation will be interpreted, however. There seems to be a possibility that, as in other countries, owners and occupiers could be included alongside plant operators as causers, by omission – ie, for failing to prevent the escape of substances which they knew or should have known to be present on their land. The law does not specify apportionment rules for multi-party cases, which means that established rules will apply. Those are: joint and several liability if there is more than one owner, and either joint and several or proportionate liability if there is more than one causer/polluter.

The Decree imposes duties on the regional, provincial and local authorities, to draw up inventories of contaminated sites, decide priorities for remedial action, to approve and certify remediation projects and to provide regulatory controls where necessary. Certain sites are to be separated out as sites of national interest and dealt with directly by the Environment Ministry and the Environmental Protection Agency (ANPA), in conjunction with the regional authorities. The law also lays the foundations for setting: the limit values for contaminants in the different environmental media, based on different site uses; the guidelines for sampling and analysis of site materials; and the criteria for remedial design and remedial action.

The background to this system includes a programme of identifying contaminated sites in each region, begun in 1989, which yielded in 1997 a provisional total of almost 9,000 potentially contaminated sites (with several important regions missing from the data). During the early 1990s, a number of regional governments had also passed their own site clean-up laws, including Tuscany, Emilia-Romagna, Piedmont and Lombardy. In various ways, these imposed strict liability on operators and site owners.

In December 1998, law 426/98 included a list of 14 (industrial) areas classified as of national interest, thereby meriting national attention and possibly extra funding. In October 1999, the technical details for implementing the Art. 17 regime were set out in a Ministerial Decree (471/99). This included definitions for key factors, such as polluted and potentially polluted sites, emergency safety measures, clean-up, clean-up with safety measures, environmental restoration, permanent safety measures and diffuse pollution. A polluted site is defined as one where contamination levels or chemical, physical or biological changes to soil, sub-soil, ground- or surface water endanger public health or the natural or built environment. The definition further specifies that a site will be deemed polluted when a single limit value is exceeded. The Decree also set out: criteria, procedures and methods for the three response actions (safety measures, clean-up and restoration); criteria and procedures for site sampling and analysis; the methods and approval procedures for remedial design and remedial action, including risk assessment based on site-specific analysis; criteria for defining sites as contaminated; the responsibilities of public authorities to investigate, classify and register sites; limit values for 94 substances against two land uses (residential/recreational and industrial/commercial) for soil, and for 92 substances in relation to groundwater; the obligations on site owners and operators to check compliance with the limits, notify and liaise with public authorities, and undertake emergency action; and the criteria for voluntary clean-ups.

In June 2000, Legislative Decree 160/00 extended the deadline for owners and responsible parties to notify the authorities of existing contamination and initial safety measures, from 16 June 2000 to 1 January 2001. There has been some debate about the retroactive application of the Ronchi Decree rules. The law came into effect on 16 December 1999, but it remains unclear whether contamination that occurred before that date will be covered by the new regime or treated differently. One view is that, irrespective of the date of causation or discovery, any contamination still present at the entry date will be subject to the full remedial obligations set out in Art. 4 of the implementing decree (471/99). There seems to be nothing in the law to prevent that. The opposing view, however, is that such pre-existing contamination will be subject to more flexible rules, under Art. 9 of the same decree, which deals with voluntary clean-up, provided the responsible parties declare the presence of the contamination and their intention to address it before the 1 January 2001 deadline. It is widely thought that the second view will prevail, not least because of the cost implications of tackling all historic damage under the new regime, but there seems to be a possibility that courts could uphold the other position.

One of the complications here is that under Italian law there are now three overlapping regimes which could be used to address cases of environmental damage: (a) the Civil Code, under which Art. 2043 requires proof of fault, but Arts 2050 (dangerous things) and 2051 (things in one's custody) are close to being strict liability (the burden of proof concerning fault is shifted to the defendant); (b) Law 349/1986 (which established the Environment Ministry and some rules for environmental damage), under Art. 18 of which liability is stricter than under the Civil Code, although still in principle requiring proof of fault, and a form of punitive damages is available (including recovery of profits gained through the offending action); and (c) Art. 17 of the Ronchi Decree, which provides for administrative action against causers and owners. Each of these regimes has different provisions (defences, apportionment rules, etc), allowing a choice of courses of action, at least in some cases.

Another key factor here is that waste producers may be liable for damage even if it results from the activities of an independent disposal operator to whom they transferred their wastes legitimately. This has been the rule ever since a 1982 law on waste (Presidential Decree 915 of 10 September 1982), which makes waste producers responsible for the costs of final disposal of their wastes, as well as for checking the suitability of any disposal companies they use. In a high-profile case in Milan, municipal and regional authorities (Lacchiarella and Lombardy) have been suing nearly 300 waste generators for clean-up of widespread damage caused by a company called Petrol Dragon which claimed to have invented a process for producing petrol from waste. Petrol Dragon is subject to criminal proceedings for the harm it caused, but has no funds for the clean-up. Some relief for future defendants may be available under the Ronchi Decree, however, which provides that legal transfer can be a defence against liability in such cases, at least from the entry date of the decree.

On the traditional damage side, there seem to have been few personal injury cases from environmental events up to now. The evidence from employee liability cases, however, is that the fault element is now rapidly diminishing in such litigation. Defendants are routinely required to prove that they have done everything possible to prevent harm and this is rarely achieved. The burden of proving fault has been effectively reversed, although the burden of proving causation remains with the plaintiff.

Among other issues, the limitation period in Italy is 5 years from discovery (when the plaintiff knew or should have known of the harm), for civil actions, but no limitation on

administrative orders, which are based on the circumstances existing today, regardless of the dates of causation or discovery. As far as scope of activities covered, Italian civil and administrative law adopts an all-damage approach, without restriction to lists of installations or activities. Even the standard for a dangerous activity under Art. 2050 of the Civil Code is all-embracing: anything that causes harm can be deemed, *a posteriori*, dangerous.

NETHERLANDS

- major shift in soil remediation policy, to function-oriented and cost-effective approach – announced in 1997, launched as BEVER Implementation Programme in 1998

- early experience with revised liability rules under the Soil Protection Act (Wet bodembescherming (WBB)) 1994

There has been no new primary legislation in this field in the Netherlands since 1995. There has been, however, a major change in a key aspect of the Dutch environmental liability regime: soil remediation policy. After many years of international renown as the country which set the demanding goal of "multifunctionality" (clean-up to a standard suitable for any future site use), a switch was announced in June 1997 to "function-oriented and cost-effective remediation". That shift, described by the government as a "drastic change" in policy, followed an inter-departmental policy study, set up in May 1996, and a policy updating process, known as BEVER (Beleids Vernieuwing Bodemsanering), involving the Environment Ministry (VROM) and local authority associations, begun in 1995.

As with policies elsewhere premised upon complete restoration of land or soil, such as the US Superfund preference for "permanent treatment", there had been a growing realisation over several years that the multifunctional strategy ("restoration of multifunctionality, unless there are site-specific circumstances") was not working. There were numerous problems. Because the multifunctional goal was not attainable in many cases, a large measure of discretion had fallen on local enforcement authorities, leading to unpredictable and inconsistent requirements[4]. The resulting anomalies and uncertainties had become a major obstacle to spatial and economic development. Support for voluntary private clean-up was limited and crumbling away, as many potential volunteers saw advantages in postponing action – enforcement action was ineffective, future clean-up techniques were expected to be cheaper and clean-up requirements were expected to be relaxed. Little use was being made of state co-financing and loan schemes to aid private clean-up, because a policy objective of complete separation of public from private clean-up had resulted in the schemes being narrowly defined. Overall, the sums of money involved from all sources were insufficient to make good progress and could be better targetted and spent.

Without wishing to relinquish a long-term objective of restoring soil to the highest quality, there was increasing concern to break the logjam in the clean-up programme. The inter-

[4] Where total clean-up was impossible, a lower standard known as IBC (ICM in English – isolate, control and monitor) was available, but this dichotomy was often found to be inflexible and some local authorities would routinely sanction intermediate alternatives which were better attuned to the circumstances, but had no formal status.

departmental study reported in March 1997 that, 15 years after soil restoration became an important policy goal (with the adoption of the Soil Clean-up (Interim) Act in 1982), the estimated total cost of cleaning-up existing polluted sites on land in the Netherlands (excluding polluted underwater sediments and new cases of pollution) remained around NLG 100 billion (euro 45.4 billion) and was currently rising by a few hundred million guilders each year. Although there is a fairly big margin for error in such figures, the unavoidable conclusion was that, if the current policy continued, with annual expenditure on remediation of less than NLG 1 billion (euro 454 million), the clean-up operation would take about another hundred years. Even with additional spending, the study concluded, the existing target (in the National Environmental Policy Plan (NEPP-2)) of having all cases of serious soil pollution cleaned up or secured by 2010, would be unachievable.

One of the biggest underlying problems was that not enough priority had been given to cases where pollution was migrating underground. That meant that delays or postponements of remedial action not only had socio-economic consequences by obstructing development; they were also allowing the pollution legacy for future generations to get worse. The position was described as grave and the inter-departmental study pointed to two possible solutions: make clean-up cheaper and create more market dynamics (ie, get more funding sources involved and strengthen the financial incentives for participation). The study outlined several more specific steps to help achieve this and reviewed two possible approaches to function-oriented remediation: an "environmental returns" approach, focusing on the most cost-effective environmental gains, and a "returns on use" approach, requiring minimum environmental standards then allowing the party doing the remediation to decide how much further he wanted to go (in order to widen the potential uses of the site).

In either case, the fundamental assumption was that much more pollution than previously envisaged would have to be left in the ground. The main focus would be on mobile pollution; as much of this as was cost-effectively possible would be removed. Stationary pollution would receive a lower priority, with only the most serious cases removed. The study estimated that the aggregate bill for soil pollution clean-up could be reduced by around 35-50% by reforming the programme along these lines.

On 16 June 1997, the Dutch government issued a policy statement confirming that it was adopting most of the recommendations of the inter-departmental study and many of the ideas from BEVER. It argued that existing practices of soil clean-up were too expensive and taking too long; the whole process was causing economic stagnation, harm to society and a negative impact on the residential environment. A sharp change of course was therefore necessary, it said, to make remediation cheaper, boost market dynamics and integrate soil remediation into wider social processes. It estimated that the new approach, including some extra resources from the state, would result in a doubling of remediation capacity and a halving of the overall clean-up period, from 80 years down to 40. The earlier NEPP target of dealing with urgent cases by 2010 would be replaced in the new Plan (NEPP-3) by more modest objectives: a mapping of soil pollution nationwide by 2005, permanent management of the soil pollution that remained and efforts to control the soil pollution problem (preventing further dispersion and guaranteeing the safety of exposed people and eco-systems) within about 25 years.

More detailed points included: greater decentralisation of policy implementation (area-specific management); earlier integration of soil quality into development plans and other policy areas; new proposals for mixed (public-private) financing of remediation, including

the possibility of a private soil remediation fund to promote advance financing by the state and provide more favourable financial terms for Third Party clean-ups; legal reforms, among other things, to protect buyers in land transactions, to combat corporate evasion, to encourage a cluster approach to clean-ups and to help owners and investors pursue cost recovery from polluters. Three principles would continue to underlie the package: individual responsibility in accordance with the polluter pays principle; owner's risk – the owner has the benefits but must also carry the burdens; and, if the first two can not be put into practice, the principle of gain – whoever stands to gain from the clean-up must contribute. Some of the measures would also be tied to time frames: financial conditions for private clean-ups, for example, would become less favourable as time went by and would include a time limit.

The implementation programme for these changes was announced in May 1998. This comprised three tracks: function-oriented and cost-effective remediation, market forces and effective government. In December 1999, the Environment Minister announced that the first of these had been accelerated in order to minimise a hiatus in the field while practitioners awaited the new guidelines, and was now complete. Among other things, the new aim would be to return the soil to a state in which it meets the criteria for use and, in cases involving subsoil, no longer constitutes a source of diffusion of contamination into the surroundings. Part of this would involve a structural distinction between mobile and immobile situations. The protection of people and the environment against exposure to soil pollution would continue to be guaranteed, and procedures and decision-making would be streamlined, including a shift from prior checking of plans to checks on their implementation. An overview was given of the new technical principles, as well as an indication of amendments that would be needed to the Soil Protection Act (WBB) and other legislation. Further details have been given in, among other things, an Environment Ministry publication (From funnel to sieve: remediation goal appraisal process), in October 1999, and a circular of 4 February 2000, on target values and intervention values for soil remediation, which replaces previous circulars issued since 1994.

Meanwhile, the last five years have been the first opportunity to see the effect of revisions that were made to the legal position on soil clean-up liability, under the revised WBB of 1994. The reforms were made amid considerable controversy as the government tried to tighten a number of what it saw as loopholes in the previous statute governing liability in this field, the Soil Clean-up (Interim) Act 1982, which had itself been passed rather hastily following discovery of major contamination problems in the district of Lekkerkerk and elsewhere around the beginning of the 1980s. One of the key controversies concerned the so-called "relativity" principle – the question of whether a polluter had to know at the time he was causing the harm to the environment that his actions would trigger government response costs[5]. In numerous cost recovery actions under the 1982 Act, government plaintiffs had argued that this principle was not relevant, but the Dutch Supreme Court ruled in 1992 that relativity had to be proved and that the cut-off date at which defendants should have been aware that the government would respond to pollution was 1 January 1975 (determined somewhat arbitrarily as the mid-point between two government initiatives, at either end of that decade).

When an amended version of the 1982 Act was incorporated into the WBB in 1994, there remained considerable dispute about whether the new provisions (s.75(6)) had dispensed

[5] This version of the relativity principle applies to cost recovery; it can also be said to have a wider meaning – whether the polluter owed a duty of care specifically to the government, rather than a duty only to neighbours or other Third Parties.

with the need to prove relativity. Case law since then seems to indicate that defendants are still succeeding in claims for immunity for damage caused before 1975 on that basis, where the government has brought actions for cost recovery under s.75 of the Act. Some legal experts believe that this reflects a misreading of both the new law and the new Civil Code introduced in 1992, but that view is not universally accepted. On the other hand, there seems to have been a policy shift on the part of the Environment Ministry, away from cost recovery actions, in favour of enforcement first, using administrative order powers under a separate part of the WBB (s.43 et al). This provides for strict liability against causers of soil contamination, owners or occupiers, irrespective of the type of activity and with none of the common civil law defences (Act of God, Third Party intervention, etc) – the only defences available are innocent owner/occupier (s.46(1)), *de minimis* contribution (s.46(2) & (3)) and general norms of administration. As yet, most cases pursued in this way appear to be resolved through settlement. Some cases against site owners are reported to have been brought, but have either been withdrawn or not yet reached the senior courts, nor have there been any rulings on the *de minimis* ("did not in the main cause the contamination") or innocent owner defences.

In one prominent case, *Moerman v Bakker* (17 January 1997), however, the Supreme Court ruled on a related matter in the context of joint and several liability. In this case, concerning pollutants discharged into water by two separate parties, the court upheld liability for the full costs against one defendant even though he had caused only part of the damage. Interpretation of this ruling was disputed among legal experts, some saying that it was a pioneering application of a potentially far-reaching principle established in the *DES* product liability case in 1992 (Supreme Court 9 October 1992, no. 14667)[6], others arguing that the judgment was based simply on the joint and several liability provision under Art. 6.99 of the Civil Code.

On other issues, some observers detect increased use of an alleviated burden of proof in the Supreme Court, building on a long-standing principle of judicial discretion on this where there are strong *prima facie* indications of causation. There seem, on the other hand, to be few personal injury cases concerning environmental events and very little case law on damage to natural resources, apart from some important administrative rulings on the impact of proposed developments.

Another potentially important development has been the launch in 1998 of an integrated environmental insurance package, combining liability and property cover which were previously sold separately. This is one of the most innovative initiatives in this field in world insurance markets and had been in preparation since the early 1990s. It builds on the work of the long-established Dutch environmental insurance pool, MAS, now renamed Nederlandse Milieupool. The new package offers a choice of policies to both fixed and mobile operations, based on property insurance, rather than liability, but covering both First Party and Third Party damage. It is still too early to assess the performance of these policies, but there is considerable interest in this approach in other countries.

[6] Among other things, this involved acceptance of alternative causation, and therefore (joint and several) liability, in circumstances where only partial contribution to the damage can be established.

SPAIN

- Law 10/1998 of 21 April 1998 on wastes

- (Basque Country) Law 3/1998 of 27 February 1998 on protection of the environment (and other regional laws)

- draft proposals for a law on civil liability of activities dangerous to the environment

The main legislative development in this field at national level in Spain since 1995 is the adoption of the Wastes Law (10/1998), in April 1998. The primary object of this law is to implement Council Directive 91/156/EEC. Title V, however, deals specifically with contaminated soils. Early versions of the law, which took many years to complete, included wider rules on civil liability but, by the mid-1990s, those were taken out for preparation as separate legislation (see below), partly in order to finalise the waste regime.

Contaminated soil is defined (Art.3) as any soil whose physical, chemical or biological characteristics have been negatively altered by the presence of dangerous substances (*componentes*) of human origin, in a concentration which creates a risk for human health or the environment, in accordance with criteria and standards determined by the Government. Title V of the Act obliges the autonomous regional governments (*comunidades autónomas*) to draw up inventories of contaminated sites, evaluating the risks and elaborating a priority list for remedial action. Once a site is declared contaminated, there is a duty to clean-up and restore it as and when requested by the regional authority.

Liability for carrying this out is assigned, first, to those who caused the contamination or, secondly, to the possessors (*poseedores*) of the site or, third, to (non-occupying) owners (Art.27(2)). The liability is strict and joint and several (though neither is specified), and seems to be irrespective of the date of origin of the contamination. There are no specified defences. A note may be entered on the regional Land Registry, which can be deleted once the authority deems that the site is no longer contaminated. The national government is to draw up a list of potentially contaminating activities. Enterprises which undertake any of these will have make a public declaration of that fact, also for inclusion on the Land Registry, and submit periodic reports of relevant data at intervals determined by the regional authority. Neither transfer of the possession of the land nor its mere abandonment can remove the liable parties obligations. Remedial action can be carried out under voluntary agreements or covenants (*convenios*) between the liable parties and the responsible authorities (Art.28). Under Title VI on enforcement and other matters, any failure to carry out the clean-up obligations or associated agreements is treated as a "very serious" breach of the law (on a scale of very serious, serious and minor infractions), carrying a potential fine of up to Pta 200 million (euro 1.2 million) and other penalties.

There is some speculation among legal experts that the authorities may in due course include owners and occupiers within the category of causer of contamination, on grounds similar to the notion of knowingly permitting used in UK law (see UK entry below), but this does not seem to have occurred so far. Work is still going to establish the list of potentially contaminating activities and a system of back guideline for soil investigation which will form the basis for more detailed regional regimes. The regional governments have considerable autonomy in this field, holding the responsibility for environmental management and for implementing laws of this kind. Regional laws can go beyond the

national provisions provided they conform to the national requirements. For contaminated land, many either have developed, or are developing, their own soil criteria. In the Basque Country, for example – one of the regions (along with with Andalucía, Cataluña, Galicia, Madrid and Valencia) with a high concentration of contaminated land, because of its industrial past – the underlying legislation is the region's Environmental Protection Act (Law 3/1998 of 27 February 1998), Chapter V of which deals with contaminated soils. In most respects, this follows the national provisions, but it also underpins specifically regional approaches to risk assessment, remedial design and remedial action, including soil screening values known as Indicative Values for Assessment (VIEs). That builds on a very active programme of work in the Basque Country since the early 1990s, including a Soil Protection Master Plan, first launched in September 1994. Under this initiative, a great deal of investigation has been done by the regional government and its publicly owned environmental management company, IHOBE, to identify the extent and nature of the problem. Initial estimates in 1994 of the cost of remediation at some 920 highest priority sites suggested a cost of Pta 115,076 million (euro 691.6 million), with that figure expected to rise substantially as the investigations continued. The regional government also has a history of negotiating voluntary agreements with potentially liable parties to clean up historic contamination, notably a major problem of lindane (HCH) waste at Bilbao's Sondika airport in the mid-1990s.

Similar initiatives are already well advanced in Cataluña, Galicia and Madrid, among other regions, most involving regional soil quality criteria. One of the most recent laws was passed in Valencia on 12 December 2000, as Law 10/2000 on wastes. In conjunction with the regions, the national government has been compiling, in several phases, a National Inventory of Contaminated Sites since the beginning of the 1990s, as part of a wider National Plan for Remediation of Contaminated Soils, the latest version of which covers the period 1995-2005.

Meanwhile, progress towards a national civil liability law has been slow. Various draft proposals have been circulated since 1996 and earlier texts existed when the provisions were to be included in the wastes law. Numerous consultations have taken place with experts and interested parties and a text (*Anteproyecto de Ley de Responsabilidad Civil derivada de actividades con incidencia ambiental*) was officially presented at an environmental law conference in Barcelona in November 1999. In September 2000, however, it was reported that this initiative was being slowed down, with a suggestion of awaiting progress on the work towards an EC directive.

In that context, not too much can be read into the draft proposals, since any law that emerges may take a different form. Nevertheless, it may be useful to note that, in broad outline, the draft provisions included:

- strict, and joint and several, liability on the persons or entitities which, by action or omission, caused the damage (including parent companies, where there are signs of corporate evasion or fraud);
- restriction to a list of dangerous actitivities (excluding nuclear damage);
- damage to persons, property and the environment (broadly defined);
- a presumption of causation where the particular circumstances suggest that the relevant activity could (or is likely to) have caused the harm, unless the activity concerned has remained within the terms of all applicable authorisations;

- defences in terms of: contributory negligence on the part of the victim (either reduction or annulment of liability), state of the art, informed consent of the victim, Third Party intervention (exclusively caused by), tolerable levels given local circumstances (provided full compliance with authorisations, but not if the damage could have been avoided without disproportionate cost);
- compliance with applicable norms or authorisations explicitly rejected as a defence;
- rights of action for victims and, in cases of damage to the environment or public goods, the relevant public authorities, environmental groups and locally-based groups;
- a right to information disclosure from defendants (subject to constraints);
- a financial limit of Pta 15,000 million (euro 90.1 million) per liable party, per incident (for the damage caused by a particular act or omission);
- rules for administrative or criminal law actions on the part of public authorities; and
- limitation periods of three years from discovery and 30 years from causation.

In many respects, as in other countries, this is a consolidation of what is already happening in case law. Although still in principle requiring proof of fault under Art. 1902 of the Civil Code, in civil liability cases the courts now frequently infer a presumption of negligence from the mere existence of damage. The degree of alleviation of the burden of proof on this matter seems to vary according to the size of the defendant and the degree of risk. On the basis of the same stringent duty of care or precaution, some legal experts feel that the Third Party intervention defence proposed in the civil liability draft legislation, for example, would be interpreted very narrowly.

SWEDEN

- Environmental Code (Miljöbalken) (adopted June 1998, in force 1 January 1999)

The main development in Sweden since 1995 has been the introduction of a new Environmental Code, which was adopted in 1998 and came into force at the beginning of 1999. This amalgamates the provisions of some 15 previous acts. More detailed provisions have to be set out in ordinances, based on the fundamental rules in the Code. Although much of the text is a consolidation of existing law, the Code also brings several changes to Swedish environmental law, from general rules of consideration – polluter pays, precautionary and prevention principles, a knowledge requirement concerning measures to prevent harm from any activity, and a best available technology requirement for all professional activities, etc – which (although not new) may now have wider application, to a new system of environmental courts, new powers of intervention by the regulatory authorities, a new system of environmental sanctions charges and stricter penal sanctions (see below).

As far as environmental liability is concerned, civil law compensation rights, from the Environmental Damage Act 1986 (1986:225), are largely unchanged (see below), but the administrative rules governing contaminated land or "polluted areas", although drawing on earlier provisions in the Environmental Protection Act 1969 (1969/387), are substantially new. These are set out in Chapter 10 of the Code. The provisions of this chapter have a broad scope, covering land and water areas, buildings and structures that are so polluted that

they may cause damage or detriment to human health or the environment. The liability standard is strict and applies to any activities which cause the relevant damage.

Liability for remedial action ("after-treatment") at such polluted areas falls, firstly, on operators whose actions have contributed to the harm ("persons who pursue or have pursued an activity or taken a measure that is a contributory cause of the pollution (operators)") or, secondly, if no operator is able to carry out or pay for the action, the land owner provided he either knew or should have known of the pollution at the time of acquisition and bought the property after 31 December 1998. Owner's liability is qualified in two further ways: in cases of residential property and polluted buildings or structures, it is conditional upon actual knowledge of the pollution; and there is an exemption for banks acquiring property to protect a security interest, under the Swedish Banking Act (1987:617). On the other hand, even if an owner is not directly liable as either an operator or an owner with knowledge, he may nevertheless be obliged to pay costs equivalent to any rise in value of his property as a result of the remediation.

Liability generally consists of a duty, "to the extent reasonable", to carry out or pay for any after-treatment measures that are necessary to prevent or combat subsequent damage or detriment to health or the environment. Some flexibility is built in to decisions about the extent of liability, by a requirement to take account of three factors: the length of time that has elapsed since the pollution occurred, whether the liable party was obliged to prevent future damage and any other relevant circumstances. A fourth factor applies only to operators, where account should also be taken if he can show that he was "only responsible for the pollution to a limited extent".

Subject to those conditions, where there are multiple liable parties, liability is joint and several, with qualifications. In the case of multiple operators, the liability of a *de minimis* contributor, defined in terms of responsibility for the pollution that is "so insignificant that it does not by itself justify after-treatment", is limited to a proportionate share. That aside, the payments are to be shared between liable operators "as appears reasonable with regard to the extent to which each of them was responsible for the pollution and other relevant circumstances". In the case of multiple owners or leaseholders, payments are to be shared on the basis of their knowledge of the circumstances at the time and other circumstances.

These provisions imply several possible defences including: innocent owner (without knowledge), secured creditor and *de minimis* contribution. There also seem to be grounds for reducing the extent of liability, in terms of the reasonableness of the required response action, the time lag since the pollution, preventive obligations at the time and equitable factors based on share of responsibility for the harm. There seems to be some risk for banks insofar as the creditor exemption applies only to owner liability, so offers no protection if foreclosure on a property leads the lender into effective operation of an activity, nor if certain conditions of ownership are classified as "measures" or "contributory causes" of pollution along the lines of the UK's knowingly permitting standard. The position is worse for bankruptcy receivers who have already been named as liable operators on several occasions in the past.

Somewhat controversially, the Chapter explicitly excludes application of any limitation period under the Limitation of Claims Act (1981:130). Some experts see possible conflict with the courts over that, although it is reported that one court has already upheld that provision under challenge from a defendant.

Ch.10 also requires owners and users of land to notify the authorities immediately if pollution is discovered and establishes the rules for county authorities to declare "environmental hazard zones" where a land or water area is so polluted that use restrictions and other precautions are necessary.

On the civil liability side, Chapter 32 of the Code ("Compensation for certain kinds of environmental damage and other private claims") closely follows the provisions of the Environmental Damage Act 1986, which was one of Europe's earliest strict (civil) liability laws. As such, it imposes strict, and joint and several, liability on operators, owners and occupiers, who pursue a harmful activity or cause it to be pursued. Liability is for bodily injury, property damage and pure economic loss, when it results from: surface or groundwater pollution, changes to the groundwater level, air pollution, land pollution, noise, vibration or similar disturbances, without limitation to particular activities (apart from exclusion of ionising radiation and electrical installations covered by other provisions). Unlike the administrative clean-up regime, under these civil liability rules there is no hierarchy of operators and owners or occupiers; in principle, joint and several liability applies here across those boundaries, although in practice there seems still to be tendency to target operators where possible.

One interesting aspect concerns the burden of proof of causation. The Ch. 32 wording speaks of damage being deemed to have been caused by a disturbance where, "in view of the nature of the disturbance and its adverse effects, other possible causes and any other circumstances, the balance of probability indicates that the disturbance was the cause". Experts differ a little on the significance of this rule, but the general view seems to be that it is a form of rebuttable presumption where there is *prima facie* evidence of probable cause. If the plaintiff can show that the relevant damage is a normal consequence of the relevant activity and that there are no obvious other activities which are likely to have caused, or other explanations for, the harm, then the defendant needs to show that there is an alternative explanation. Among other provisions, there are discovery rules based on applications to the court for disclosure of specific documents.

Supplementary to that, Chapter 33 of the Code establishes a system of compulsory insurance to finance compensation payments in cases of orphaned civil liabilities arising from hazardous activities, where the liable party is unable to pay. This will be funded by contributions from hazardous activities which are subject to permit or notice requirements.

Other aspects of the Environmental Code include:

- creation of regional environmental courts at district level in five locations, together with an Environmental Court of Appeal, within a system linking these to other arbitration bodies and courts, up to the Swedish Supreme Court;
- a new system for generating environmental quality standards;
- new powers for regulatory authorities to intervene in environmentally hazardous activities, including a right to demand review of existing permits and immediate enforcement of regulatory decisions, even where they have been appealed;
- a new system of environmental sanction charges (effectively administrative fines), ranging from SEK 5,000 (euro 553) to SEK 1 million (euro 110,600), for various operating violations of permits, requirements and conditions – intended to provide a faster response than criminal sanctions; and

- increased penalties for environmental crimes, with a narrower definition for minor infractions and more classified as middle-ranking offences subject to fines and imprisonment of up to two years.

One cautionary note about the Environmental Code is that it is widely thought not to be the final version. A committee has already been set up to review the text and recommend changes, in a phased programme over the next 4 years.

UK

- a new contaminated land and liability regime, under Part IIA of the Environmental Protection Act 1990 (in force from 1 April 2000)

- Countryside and Rights of Way Act 2000

- case law on key aspects of liability

The biggest change since 1995 in the UK has been the implementation of a new public law contaminated land and liability regime. The regime imposes strict, retroactive liability on parties who cause or knowingly permit contamination or on current owners or occupiers of sites, with very few defences, a relatively broad definition of biodiversity damage, and an unusually detailed apportionment system which combines elements of joint and several, and proportionate, liability, together with multiple exclusion tests[7].

The new regime came into force in England on 1 April 2000 (14 July 2000 in Scotland), with the implementation of statutory guidance and regulations. It is the outcome of a long process of proposals, consultations and revisions, dating back to a hastily drafted section (s.143) of the Environmental Protection Act 1990, which would have introduced a nationwide register of sites that had, at any time, contained potentially contaminating uses. After criticism that this would undermine the property market in large parts of the UK, new proposals and consultations led to a major part (s.57) of the Environment Act 1995, which inserts a Part IIA in the 1990 Act, covering contaminated land and liability. It then took another five years, and several more rounds of consultation, before the implementing details were finalised in the statutory guidance and regulations.

The outcome of this rather convoluted process is one of the most complex and prescriptive regimes outside North America. Although some important elements are still open for judicial interpretation, the government has attempted to provide solutions to many of the anomalies and complications which have arisen under similar regimes around the world. The official objective has been to clarify and consolidate liability rules which have long existed under statutory nuisance, rather than to introduce new ones. Nevertheless, this clarification provides the framework for a more interventionist approach to contaminated land, because the older provisions were relatively little used. The detailed nature of the

[7] A few details of the regimes, including implementation dates, will vary between the constituent parts of the UK (England, Scotland, Wales and Northern Ireland), but in most respects they will be very similar.

guidance is also intended to make stringent liability rules effective, so ensuring that parties who meet the criteria, rather than the general public, pay for the remediation process. On the other hand, provisions such as the emphasis on a "suitable for use" approach to remediation and the wide-ranging exclusions for parties who bear only marginal responsibility for the damage are intended to minimise market disruption and to restrain the overall costs of the regime. Among other things, it is hoped that much of the remediation will continue to be achieved through normal market processes of land redevelopment, as has been the case in the past.

Under the new regime, local authorities have a duty to: inspect their areas, identify any contaminated land, establish responsibilities for remediation of the land, ensure that appropriate remediation takes place and keep a public register listing the regulatory activity that has taken place. In so doing, certain sites will be defined as "special sites" and assigned to the national environment agencies for the different parts of the UK to oversee the remediation. The regime gives for the first time a statutory definition of "contaminated land" (s.78A(2))[8]. The definitions of significant harm and significant possibility of such harm are given at some length, but essentially involve two elements: a risk-based approach requiring the existence of one or more "pollutant linkages" (pollutant-pathway-receptor), or risks of such linkages; and a definition of harm, which includes health damage, irreversible or substantial adverse changes to eco-systems or components of such systems within protected areas, and harm to agricultural and other rural property, or property in the form of buildings. Where a risk of harm, rather than actual harm, is concerned, judgments about significance must be in line with specified criteria and based on authoritative, scientific evidence. A separate definition is given for pollution of controlled waters (s.78A(9))[9] and rules are provided for distinguishing cases where such pollution results from contaminated land, from other cases where land contamination either has not played, or no longer plays, a part[10].

Ecological (biodiversity) damage is confined under the regime to sites protected under nature conservation legislation, but the definition of such damage is relatively broad. It includes both general concepts of irreversible or substantial adverse change in the functioning of eco-systems and, in the case of European sites (Natura 2000 SACs or SPAs, including candidate sites), "harm which is incompatible with the favourable conservation status of natural habitats at that location or species typically found there". Local authorities are obliged to seek the advice of the statutory nature conservation agencies in making such judgments.

Remedial action is to be secured by means of remediation notices served on specified liable parties ("appropriate persons"), by voluntary agreements accompanied by remediation statements outlining what is to be done, or, as a last resort, by cost recovery from the responsible parties following action undertaken by the public authorities. The clean-up standard is suitability for use, such that a site, in its current use, is no longer contaminated land and that the effects of the harm or pollution of controlled waters have been remedied.

[8] "any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that – (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be, caused"
[9] "the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter"
[10] The latter are subject to a separate strict liability regime under s.161 of the Water Resources Act 1991 whose provisions are potentially more onerous to defendants (none of the Part IIA exclusions, etc). There was a fear in the regulated community that enforcement bodies might use so-called "works notices" under that regime wherever water pollution arose, but the guidance seeks to limit that option and provisions in a Water Bill currently before the UK parliament are intended to harmonise key elements of the two regimes.

Current use includes both existing use and any likely future use consistent with existing planning permissions at the site. The enforcement authorities are also required to take into account any possible temporary uses and any informal recreational uses, whether authorised or not. Remedial action, which may include separate actions for each of several different pollutant linkages at a single site, must be assessed against a standard of best practicable technique, taking account of four criteria: reasonableness, practicability, effectiveness and durability. Any of the main remediation strategies is permitted: ie, removing or treating the pollutant, breaking or removing the pathway, or protecting or removing the receptor. The guidance contains substantial detail on all these matters and other aspects of the remediation process.

The most unusual parts of the regime come in Chapter D of the statutory guidance, which deals with exclusion from, and apportionment of, liability. The basic liability standard is strict and fully retroactive (in the sense that it applies irrespective of the date of causation or discovery of the harm). The regime is not confined to any list of activities. Any person, business or organisation may be liable if they fall into one of the two categories of liable party, which are:

- a person who caused or knowingly permitted the presence of (any of) the contaminants in, on or under the land (a Class A appropriate person), or
- the owner or occupier of the land (a Class B appropriate person).

While Class A can be seen as the polluter and Class B as the owner/occupier, that can be misleading. A key element of this regime is that Class A is significantly broader than many other definitions of the polluter (including the White Paper notion of the person or operator in control). The test of "causing or knowingly permitting" has a long history in UK environmental law, going back over 100 years. No clear definition of the terms is included in the regime, the government preferring to rely on established case law. Official commentaries have, however, offered some insight into what the government expects the terms to mean.

"Causing" is expected to require that the relevant party is involved in some active operation to which the presence of the pollutants is attributable, but omissions or failures to act may also be included in some circumstances. "Knowingly permitting" is much wider than mere causative omissions. It is expected to require knowledge of the substances' presence and both opportunity and means to prevent their being there. Knowledge may well be construed as objective or constructive knowledge (knew or should have known), rather than actual or subjective knowledge. The government has sought to ensure that mere notification by the authorities of the presence of contaminants is not in itself enough to make an owner/occupier a knowing permitter (ie, move him from Class B to Class A). On the other hand, the guidance confirms (section D.78) that knowingly permitting the *continued presence* of a pollutant, although different from causing or knowingly permitting its *entry* into the environment, is sufficient to qualify the relevant person as a Class A liable party, unless he did not have adequate means and opportunity to deal with the pollutant, in which case his liability may be reduced. To be a mere owner or occupier (Class B person) therefore requires a lack of knowledge of the contamination (possibly despite efforts to find out) or a lack of means and opportunity, and in many cases probably both.

Class B parties only become liable if no Class A person can be found, with the proviso that, where multiple pollution linkages are identified at a single site, liability is assigned

separately for each. The liability of Class B parties is also limited in two other ways: they are liable only for remedial action within the boundaries of their own property and they bear no liability in cases which solely concern pollution of controlled waters (under the Water Resources Act 1991).

The regime includes one narrow defence, in terms of not complying with a remediation notice if one of the other recipients has failed to comply with it. No other defences are specified as such, but the regime includes 19 grounds for appeal[11] and a complex system of exclusions and apportionment rules for the remaining liability parties (see below). Some of the exclusions contain elements of recognisable civil law defences, such as Third Party intervention and foreseeability, although restated in a more restrictive way. Broader defences, such as state-of-the-art, due diligence or permit compliance, are not available, nor is there any mention of narrower ones, such as act of God or *force majeure*. Not only is permit compliance not a defence, any breaches of permits are likely to be subject to criminal prosecution, involving both penalties and more onerous remediation requirements than those under Part IIA (complete removal of contaminants, rather than the suitable for use standard). There is, however, a general principle that apportionment should reflect the relative responsibility of each liable party for creating or continuing the risk caused by the pollution and various instructions are given in the guidance on how to implement that, any of which might provide grounds for mitigation of liability, as might the tests of significance of harm and reasonableness of response. There is also provision for hardship (primarily financial) to be taken into account, after liability has been assigned, as a possible ground for reducing or even waiving the liability. In principle, there is no alleviation in the burden of proof on the enforcing authorities, but they do not necessarily have to prove causation in order to establish liability.

The procedure for determining liability under Part IIA is specified in considerable detail. First, the authorities must decide whether several or only a single (significant) pollutant linkage exists at a site. Then a liability group, composed of one or more liable parties, is identified for each pollutant linkage. Class A parties must be sought first and Class B parties investigated only if no Class A parties can be found. The term "found" is interpreted as including current existence, in the sense that companies which no longer exist can not be found, although where a process of insolvency is continuing, the insolvency practitioner himself stands in for the liable party, subject to certain limits, and the guidance also speaks of a possibility of annulling the dissolution of a company. Those qualifications aside, if Class A parties can be identified, but have ceased to exist, Class B parties will bear the liability instead.

After identifying the members of a liability group for a particular pollutant linkage and reviewing a minor list of exemptions[12], a series of exclusion tests must be applied to decide whether any members of the group should be removed (or have their liability reduced). The tests are highly specific in the case of Class A parties, but much simpler for Class B. In both cases, however, there is a fundamental requirement that no test should be applied if its application would result in all the remaining members of the liability group being excluded. In other words, exclusion can not be used to get rid of all the liable parties – at least one

[11] These mainly concern failures on the part of the enforcement authorities to act in accordance with the Act or the guidance and regulations, such that the wrong person has been served with a notice, the harm is not sufficient to merit remediation or either the remedial action required or the liability imposed is excessive.
[12] For Class A parties, water pollution from abandoned mines; for Class B, escape of pollutants from another piece of land; and for certain intermediaries, such as insolvency practitioners, limitations specified in the Act.

must remain. Once in a liability group, provided it is properly identified, all the members are potentially liable; exclusion simply removes, or reduces the liability of, those thought to bear a marginal responsibility and channels the burden to those thought most responsible.

For Class A parties, there are six exclusion tests, which must be applied in the specified order: (1) excluded activities, (2) payments made for remediation, (3) sold with information, (4) changes to substances, (5) escaped substances and (6) introduction of pathways or receptors. The excluded activities in the first test (1) include: providing financial assistance, underwriting insurance, investigations to decide whether to do either of those (subject to constraints), consigning waste to another, creating a tenancy, licensing occupation, issuing a statutory authorisation, taking or failing to take statutory enforcement action, providing legal, financial, scientific, engineering or technical advice, and supplying goods or services. Many of these are not thought likely to be included in any liability group in the first place but, if somehow they are, they will be taken out first. Unlike the other four, tests 2 and 3 transfer liability between two parties, rather than simply removing someone; the objective in those cases is to exclude parties who have either already paid towards the remediation (test 2) or transferred ownership of the offending land to another person with adequate information about the presence of the contamination (test 3)[13]. Tests 4 and 6 exclude parties whose own releases would not themselves have triggered liability, but have since either interacted with more offensive substances released by other parties or become harmful because of the introduction by others of new pathways or receptors. Test 5 protects those whose land contains substances which originally escaped from other land, provided another member of the liability group is responsible for that escape.

When a Class A liability group has been subjected to these exclusion tests, liability is then apportioned among the remaining members according to their relative responsibility for causing the harm, taking into account any parts of the remedial action attributable to circumstances linked to a specific party, any partial applicability of an exclusion test, any lack of means or opportunity to deal with the harm on the part of a knowing permitter, relative quantities of contaminants attributable to each person or any of several surrogate methods of division (periods of operation, relative scale of operation, quantities of product, areas of land, etc). It is important to note, however, that the aggregate liability being shared out will include any orphan shares attributable to parties who no longer exist.

For Class B liability groups, the only exclusion test applies to people who occupy a site under one of two circumstances: occupancy under licence or agreement which has no marketable value or right of transfer; and payment of the full rack rent for use of the land, with no beneficial interest in the land. As with Class A, this test can not be applied if it would empty the liability group. After any exclusions, apportionment within a Class B group is based either on ownership/occupation of different parts of the site with which specific parts of the remediation action are concerned or on relative capital values of different areas of the land or interests in the same land.

In both cases (A and B), where it is not possible to assess relative shares from the specified criteria, liability is to be shared equally among the members of the group. There are then further rules for attributing responsibility between several liability groups, once internal apportionment has occurred, in cases where one remediation action is referable to two or

[13] In the case of large commercial organisations or public bodies, for transactions since 1990, mere permission from the seller for the buyer to carry out his own investigations will be deemed sufficient indication that the buyer had the necessary information (section D.59(d) of the guidance).

more pollutant linkages. These distinguish between "common action" and "collective action", with liability being assigned to Class A groups, to the exclusion of any Class B groups, in cases of common action. Rules are also given for the handling of orphan linkages, with liability for these assigned to Class A groups in any shared action (common or collective) and to Class B groups in any common action.

The question of whether this system amounts to joint and several, or proportionate, liability remains a matter of debate. The government has tended to present it as a form of proportionate liability, but some prominent legal experts have insisted that the underlying standard is joint and several. It is clear that the process includes some provisions designed to avoid disproportionate burdens on particular liable parties – where two or more parties are members of a liability group, for example, the authorities are not permitted to assign all the liability to one of those parties. On the other hand, orphan shares attributable to parties which no longer exist will be assigned to the remaining members of a liability group and orphaned linkages can be similarly reassigned. In addition, the Act itself (s.78F(9)) provides that a Class A party who is responsible for releasing a pollutant will be deemed to be also responsible for any other substance which results from a chemical reaction or biological process involving the original pollutant. International experience suggests that this notion of mixing or mingling of substances once they are in the ground leads very easily to indivisibility of harm in contaminated land cases, making the identification of proportionate shares difficult.

As yet, the regime is too new to reveal much of its effect in action. One interesting finding from its earliest days, however, is that a substantial number of the sites first identified by local authorities in searching their areas have been ones for which there is no record of any land use which would explain the contamination. Some of these concern uses which pre-date adequate records. Others involve the deposit of industrial by-products or wastes as filling materials for landscaping and similar purposes, or casual dumping on sites which never contained production operations. A further group reflects inaccurate mapping of site boundaries or misunderstanding of substance migration once in the ground.

Both planning regulations and water legislation are being adjusted to take account of the Part IIA regime. More widely, there has been some strengthening of remediation powers and penalties for biodiversity damage at protected sites under a new nature conservation law, the Countryside and Rights of Way Act 2000, which replaces legislation from the 1980s. A Merchant Shipping and Maritime Security Act passed in 1997 also extended government powers to intervene in shipping incidents which threaten to cause pollution.

On the traditional damage side, there has been a substantial amount of case law on various aspects of property damage and signs of a growing trend in personal injury claims, although the success rate of the latter seems to remain low. The leading case on common law liability in the environmental field is still the *Cambridge Water Co.* case, from 1993 (strict liability in nuisance for damage resulting from the release of dangerous substances, qualified by a defence of reasonable foreseeability of the harm, together with a clarification of strict liability under the rule in *Rylands v Fletcher* covering escape of dangerous things from land containing a non-natural use). Among recent cases, there have been interesting rulings on Third Party intervention, access to justice and other matters.

In a judgment with important implications for a defence of Third Party intervention, the UK's supreme court ruled in *Empress Car Co v National Rivers Authority* (House of Lords, 5

February 1998) that a defendant remains responsible for causing an escape of pollutants even if a Third Party enters his site and deliberately sabotages equipment, unless that intervention consists of acts or events which are abnormal or extraordinary, such as terrorism. Acts of vandalism, on the contrary, were deemed matters of ordinary occurrence, whether or not their exact incidence and form is foreseeable, and operators handling potentially polluting materials should take adequate precautions to prevent harm occurring. A week later, an appellate ruling in the High Court (16 February 1998) upheld liability against a landfill operator (Brook plc) for a release of pollutants resulting from a faulty seal in a hose carrying leachate from a landfill to a treatment lagoon. Despite the seal being almost new at the time, the court ruled that defects in such products, though possibly rare and undetectable by the user, were an ordinary occurrence or normal fact of life, such that the defendant's act of pumping the leachate remained a cause of the pollution.

Other notable cases include:

- *Hunter & others v Canary Wharf Ltd* (House of Lords, 24 April 1997), which (a) reaffirmed the restriction of rights of action in private nuisance cases to those with a legal interest in property, overturning an appellate court ruling which had extended that right to members of the owner's immediate family and other occupiers, and (b) confirmed that interference with television reception by erection of a tall building is not actionable in nuisance;
- *Peter Stewart Elliott v Agrevo UK Ltd* (Technology & Construction Court, 4 July 2000), in which a claim in nuisance for damage to fruit crops, allegedly caused by agrochemicals migrating underground from a manufacturing plant next door, was rejected for insufficient proof of causation – although the chemicals had so migrated, there were several possible causes for the damage and the exact cause remained elusive;
- *Ministry of Defence v Blue Circle Industries plc* (Court of Appeal, 10 June 1998), in which the Ministry was ordered to pay almost £5 million (euro 3.2 million) in compensation for economic losses suffered by the plaintiff (in the form of a lost sale of the property) as a result of radioactive contamination due to overflow of ponds at a neighbouring atomic weapons plant, thereby clarifying and apparently extending recovery for economic loss under the nuclear installations legislation (possibly nuisance and *Rylands v Fletcher* as well); and
- *Urban Regeneration Agency and English Partnerships (Medway) Ltd v Mott Macdonald* (High Court, October 1998), in which the scale of possible liabilities in this field was highlighted when environmental consultants were found liable for a reported £18.5 million (euro 11.7 million) in compensation for negligent advice concerning the projected cost of a contaminated land clean-up project at a former naval dockyard, after the costs escalated sharply as the clean-up proceeded, perceptions of contamination and risk differed, and the consultants' performance was deemed to have been below modern professional standards.

BELGIUM

- Law of 20 January 1999 on the protection of the marine environment in the marine areas under Belgian jurisdiction

One of several interesting developments in Belgium since 1995 – others include progress with implementation of the Flemish Soil Clean-up Decree of 1995 and the Wallonian Decree of 27 June 1996 on waste (see brief mentions below) – the federal Belgian Law on the protection of the marine environment, adopted on 20 January 1999, is one of very few statutes specifically addressing biodiversity damage and coastal habitats. In that context, its approach to liability, restoration and prevention could have wider implications.

The general approach of the law is to draw on provisions from the EC directives on habitats and wild birds, and several international conventions , in order to establish a legal framework for protection against marine pollution in a zone off the Belgian coast, including the territorial sea, the exclusive economic zone and the continental shelf. It takes the form of a federal law because this zone does not fall within the territory of the Belgian regions. It includes a broad definition of the marine environment: "…the abiotic environment of the marine areas and the biota, including fauna, flora and the marine habitats that they occupy, as well as the ecological processes at work in this environment and the interactions between the abiotic and biotic components". The main objective of the law is to safeguard the specific character, biodiversity and integrity of the marine environment through measures to protect it and measures to repair damage and environmental disruption. "Damage" is defined as "any damage, loss or prejudice suffered by an identifiable natural or legal person as a result of a degradation of the marine environment, whatever its cause"; "environmental disruption", as "a negative impact on the marine environment, insofar as it does not amount to damage".

All users of the maritime areas and the public authorities are obliged to take into account the principles of prevention, precaution, sustainable management, polluter pays and restoration. The principle of sustainable management includes protecting the ecosystems and ecological processes necessary for the proper functioning of the marine environment, preserving its biological diversity and stimulating nature conservation. The restoration principle is said to imply that, in cases of damage or environmental disruption, the marine environment is "restored to its original condition as much as possible". A further, more general obligation is imposed on any person carrying out an activity in the marine areas, to take necessary precautions to prevent damage and environmental disruption, and a particular obligation is placed on shipowners to take all necessary precautions to prevent and limit pollution.

The main part of the law then sets out provisions for habitat protection and species protection, and for establishing marine protected areas of various categories (integral marine reserves, specific marine reserves, special protection areas/special areas of conservation, closed areas and buffer zones). There is an obligation to establish a list of protected species, a ban on intentional introduction of genetically modified organisms and of non-endemic species (unless the latter can be shown to have no effect on indigenous biota and communities), protection measures for vulnerable species and a permitting system for activities which could have negative effects, which involves both advance and continuous environmental impact assessments.

In relation to pollution, the law incorporates protection standards from international regulations and introduces some extra standards, such as a requirement on the owner of any ship wrecked in the zone to take remedial action to deal with pollution or the risk of pollution from the wreck or its cargo (including, if necessary, removal of the wreck itself), and a ban on incineration or dumping of waste at sea. There are provisions to order routing of ships, in order to safeguard sensitive marine areas, and to authorise government response action where pollution occurs or is threatened.

Chapter IX of the law deals with repair of damage or environmental disruption. It imposes strict, and joint and several, liability on the perpetrator (*l'auteur*) of any damage or disruption which affects the marine areas as a result of an accident or a breach of the legislation. Defences are available in terms of: exclusive result of war, civil war, terrorism or a natural phenomenon of an exceptional, unavoidable and irresistible nature; entirely caused by a deliberate act or omission of a Third Party with the intention of causing the harm; and entirely caused by negligence or other prejudicial act on the part of an authority responsible for navigational aids. The victim suffering the damage has a right to its repair, as does the state in the case of environmental disruption.

The liable party is required to reimburse the costs of remedial measures taken by others "insofar as the costs of those measures are not unreasonable in the light of the results to be achieved for protection of the marine environment". Such costs are to include prevention and control costs incurred by the authorities or their contractors, and any overheads incurred in advance to procure the necessary materials and equipment. Implementing regulations will lay down the criteria for determining what counts as an incident of environmental disruption and for valuation of the harm. Once a risk of pollution has been established, the authorities can also demand from the liable parties payment of a deposit or a form of bank guarantee sufficient to cover the foreseeable costs, subject to the limits fixed under international law.

Since the adoption of this law, research has been initiated on methods of valuing ecological damage which is not capable of direct restoration. As part of this, studies are under way on monetary compensation standards, including interviews with representative samples of the Belgian population on their willingness to pay for certain ecological factors, based on the contingent valuation method used in the US. Other studies, under the Belgian Department of Fisheries, are investigating aspects such as the reintroduction of juvenile fish into the sea. Those studies need to be seen in the context of a general objective not to depart from the applicable international rules under the IMO conventions, and to ensure that the costs of compensation or restoration are reasonable.

Elsewhere, good progress overall is reported from the Flemish soil clean-up programme, under the 1995 Decree on that subject, which has several important features – notably, separation of the clean-up obligation from ultimate liability, a notification and site investigation requirement at any transfer of the relevant property (including leases of more than nine years, mergers and acquisitions, and leasehold transfers), an innocent landowner defence and separate rules for historic and new pollution (cut-off date: 29 October 1995). The regime does seem to have led to an increase in costs and regulatory burdens in the property market, but not as yet to any major disruption. Difficulties are reported to be arising in relation to funding of orphaned historic pollution (sites where neither the original operator nor an owner who had knowledge of the contamination at the time of purchase exist). In Wallonia, under a Decree on wastes of 27 June 1996, a fund has been introduced to cover orphaned liabilities where the liable party is either insolvent or can not be found.

3. OECD COUNTRIES

INTRODUCTION

This section reviews some of the environmental liability rules in five OECD countries: the USA, Canada, Australia, Japan and Switzerland. These are among the EU's main trading partners and are potentially important competitors in certain economic fields. Given the complexity and diversity of rules within each jurisdiction, the entries do not pretend to be comprehensive. Instead they focus on particular laws and legal regimes, with some attempt to look at how they work in practice, rather than simply how they appear in the legislative texts.

The largest entry concerns the USA, for two reasons: because of its importance in the world trading system and because of the prominent part its liability systems have played in international debate on this subject, including debate within the EU. All the countries, except Japan, have federal constitutions and all five have at least some liability rules at both national and regional or local levels. The balance between national and regional/local rules differs between the countries, however, so the entries below concentrate on the level which has most force in each jurisdiction. Those on the USA, Japan and Switzerland deal mainly with national or federal rules, while those on Canada and Australia give more attention to provincial or state regimes. In the latter case, only a sample of provinces and states is covered. In reality, the liability rules that exist at the level of the US states, Japanese prefectures and municipalities, and to a lesser extent, Swiss cantons would all repay attention but, except for a few passing remarks, that is beyond the scope of this study.

The aspects of the liability regimes which are highlighted reflect the factors included in the European Commission's White Paper proposals: matters such as strict versus fault liability, the scope of damage covered, the liable parties, apportionment in multiple party cases, defences, causation and the burden of proof, contaminated land and biodiversity damage, access to justice, etc. It is not possible, however, to generate neat comparisons factor-by-factor with the White Paper, both because multiple laws with differing rules are involved in each jurisdiction and because the same formal legal provision in one jurisdiction can have quite different results in another. One objective is therefore to give an overall impression of the legal and regulatory climate in each country, concerning remediation of damage arising from environmental events, both in terms of the burden on commercial organisations and the opportunities for plaintiffs. Only a superficial impression is possible; to go further would require a much larger study.

There are big differences between the five countries. At its simplest, the two extremes are the USA and Japan. In many respects, they represent the two ends of a spectrum, from heavy reliance on legal liability and mandatory obligations with very few defences, on the one hand, to an emphasis on voluntary co-operation and non-binding official guidance, on the other. In the real world, the respective positions are more complicated and the gap between them is almost certainly narrowing, but there is little doubt nevertheless that, in terms of liability alone (civil, administrative and criminal), the US regime is far more severe than the Japanese one. The other three countries come somewhere in between.

The key features of the US regime which make it severe include the following:

- strict and, at times, virtually absolute liability for contamination of land, groundwater and surface waters;
- very few defences, further narrowed by judicial construction;
- a wide list of potentially liable parties, further extended to include secondary parties such as parent companies, shareholders, directors and officers, etc., partly by overriding the protection of the corporate form;
- no need to prove causation in many cases;
- no right to appeal or even a court hearing before completion of remedial work;
- very severe penalties for non-compliance, including treble damages and high daily fines;
- lengthy clean-up procedures, involving substantial public participation;
- citizen suit provisions, allowing wide access to justice by environmental groups;
- potentially large compensation awards under civil law, and the possibility of punitive damages unrelated in size to the underlying compensation;
- jury trials in common law actions;
- broad discovery rules and information disclosure requirements;
- highly professional NGOs with substantial financial backing; and
- a highly litigious climate all round.

Some observers would also include on this list joint and several, and retroactive, liability, demanding clean-up standards and the possibility of liability for biodiversity damage (habitats, species, eco-systems, etc). These are certainly potentially onerous rules, but their consequences are perhaps overstated in some commentaries on the US system and they are by no means unique to that country.

By contrast, the Japanese system is characterised, among other things, by:

- no strict liability or binding obligations for clean-up of contaminated land;
- broad reliance on voluntary agreements and (non-binding) administrative guidance;
- a distinctly non-litigious climate, with an exceptionally small number of lawyers;
- small compensation awards, by OECD standards;
- similarly small penalties for non-compliance;
- limited access to justice; and
- narrow discovery and information disclosure rules.

That contrast greatly oversimplifies the position, however. On the Japanese side, it misses out the very expansive liability for health damage (personal injury) which has arisen out of serious pollution incidents, but has also included air pollution problems which other countries would categorise as diffuse. It also omits the recent introduction of strict liability for damage to groundwater and for clean-up of uncontrolled waste dumps, and the ordinances at prefectural and municipal level which contain clean-up obligations. Perhaps most important, it understates the weight given to informal government interventions within Japan, where co-operation between government and business is arguably much closer than in the US and many other OECD countries.

Conversely, on the US side, it neglects the fact that personal injury claims still face the hurdle of proving negligence or some other fault, that liability for biodiversity damage is restricted to federal or other government land and actions brought by public trustees, and that the much-criticised clean-up standards are by no means always enforced in an exhaustive way, especially under state laws. Overall, while administrative liability enforced by public

authorities is indeed severe, the enforcement record is uneven and the rules for civil liability under the common law are less strict than in some other countries.

In addition, there is the important matter of insurance cover. Despite the insistence of US liability insurers that no cover was available under general liability policies, either for gradual pollution or for clean-ups in response to government orders, in a large number of cases the US courts have rejected one or both of those arguments, ruled in favour of policyholders and so released considerable sums in insurance cover under old liability policies. For the business sector, apart from the insurance industry, that has significantly reduced their liability losses in the US in a way that may well not be replicated in other countries.

Those qualifications are important, especially the precedents set in Japan on liability for pollution-related personal injury. It would still be a brave person, however, who tried to argue that environmental liability risks in Japan were on a par with those in the US. Taking all aspects into account, the US environmental liability rules are almost certainly the most severe in the industrialised world.

Of the other three countries reviewed here, the two common law jurisdictions, Canada and Australia, are closest to the US position. There are important variations at provincial or state level in both countries – the entries below have tended to focus on provinces and states with relatively tough regimes. But the rules generally follow a similar pattern to the US ones and even those in the UK, from which their common law systems originally derive. On the administrative side, the liability rules are strict, with narrow defences; on the civil side, there are a mixture of statutory and common law causes of action, some based on strict liability, others on fault. Switzerland, not unexpectedly, is closer to the continental civil law tradition, combining strict administrative liability and obligations for several aspects of environmental damage, with a tradition of voluntary co-operation between industry and public authorities and less recourse to litigation.

Despite their differences, all three countries – Canada, Australia and Switzerland – might crudely be classified as less severe than the US, but tougher in liability terms than Japan. That is a gross simplification, however, which fails to take account of all sorts of other regulatory requirements and burdens, which can have at least as much impact on economic activity as liability. What follows, therefore, can only provide a rough guide to the comparative positions.

USA

Liability for harm resulting from environmental incidents in the US is covered by a variety of statutes, at both federal and state level, and by common law causes of action, the rules for which also vary from state to state. On the whole, environmental damage (contaminated sites and biodiversity damage) is handled under statute law containing a mixture of administrative, civil and criminal provisions, whereas traditional damage is mostly dealt with under common law.

Internationally, most attention has been directed at Superfund, but that is only one part of a more complex picture. The main federal statutes containing liability and clean-up provisions are:

- the Clean Water Act (CWA) (1972, as amended), which regulates discharges of pollutants into surface waters and other sources of harm;
- the Resource Conservation and Recovery Act (RCRA) (1976, as amended), which provides for cradle-to-grave regulation of hazardous and non-hazardous waste, and includes a corrective action programme for contaminant releases from currently operating facilities, and a separate programme addressing ownership and operation of underground storage tanks (USTs);
- the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) (1980, as amended), which deals with releases of hazardous substances from abandoned or uncontrolled sites; and
- the Oil Pollution Act (OPA) (1990, as amended), which is concerned with oil spills in the marine environment and in inland navigable waters.

These are primarily public laws, although some contain important civil law elements. They give regulatory authorities wide-ranging powers, among other things, to secure remediation of environmental damage largely at the expense of private parties or public operating entities (municipal waste operations, government defence operations, etc). There are many differences between these laws, but they have certain features in common which set them apart from many environmental statutes in other countries.

Notably, they include tough enforcement powers, wide notification and information disclosure requirements, exceptionally high administrative ("civil" in the US) and criminal penalties for non-compliance, and broad provisions for public participation in the enforcement process, including access to justice provisions known as "citizen suits". They also involve strict, and joint and several, liability for a range of very substantial response costs in the event of spills, wide definitions of the potentially liable parties (especially CERCLA and OPA), very limited defences, and, in principle, liability irrespective of when the pollution occurred – although that retroactivity is much more potent in cases involving contaminated land or groundwater, because of the long latency and dispersal periods.

In addition to these federal statutes, there are further, comparable laws at state level in most of the over 50 US states and territories. In some cases, such as CWA and RCRA, the federal laws are implemented by the states, either directly under the federal provisions or through separate state laws and regulations which must be at least as stringent as the federal texts, but can vary from them. Co-ordination is provided through oversight and regulation by the federal Environmental Protection Agency, which issues federal regulations and checks that a state's programme is in conformity with the federal law. The exception to this is CERCLA, which is implemented directly by the EPA, through its regional offices. Even there, however, individual states have their own Superfund laws ("mini-CERCLAs"), which operate separately from CERCLA, picking up sites which are not listed on to the National Priorities List. Under OPA, state oil spill laws can also supplement the federal rules, allowing affected states (mainly coastal and Great Lake states) to allocate additional liabilities on top of those arising under the federal law. In both the latter cases (CERCLA and OPA), the equivalent state laws are generally as strict as the federal ones, although the details vary and enforcement is sometimes more flexible at local level.

This all makes for a complicated picture, involving multiple jurisdictions, important variations in the law from state to state and other differences in enforcement practices. The result is a relatively unpredictable legal climate. Much depends on what state you are in. For businesses operating, or having an interest, in more than one state, the legal position is often complex. When a pollution incident requiring remediation occurs, it is not always obvious which law will be invoked to deal with it, although it is fair to assume that it will be the one which gives the authorities the best chance of assigning the costs to the responsible parties. Furthermore, most courts, at both state and federal level, have tended to interpret these laws in favour of the regulatory authorities, further broadening liability exposures and narrowing the available protections.

CERCLA or Superfund may be the most famous of these laws, but the picture painted of it is frequently misleading and, in some ways, it is a strange law to focus upon. It was designed to cover a very specific set of circumstances, filling a gap which had become apparent in the supposedly comprehensive legislation covering air, water and land, adopted during the 1970s. CERCLA was created to deal with inactive or uncontrolled hazardous sites, where the then-existing regulatory net was unable to assign responsibility effectively. In principle, RCRA allowed the authorities to pursue the last owner or operator of a leaking waste site and the CWA provided remedies where oil or hazardous substances had entered surface waters, but the RCRA liable parties had often disappeared or ceased to exist and the CWA did not address land contamination. At the same time, a series of high-profile incidents at the end of the 1970s – Love Canal and Riverside (Stringfellow), in 1978, the Valley of the Drums, in 1979, Elizabeth, New Jersey, in 1980, among others – provided stark evidence of toxic substance threats to communities throughout the US, many of which did not fit easily into the existing regulatory framework.

Because these sites involved potentially serious dangers to public health and safety, as well as the environment, the initial reaction was to provide public funds for urgent response actions (evacuation and relocation of people, containment, emergency drainage and removal measures, etc). The burden at that stage fell on the state authorities, who quickly found that the scale of the problems was beyond them and sought federal help. Responding to public anger at some of the events and realising that the long-term costs could be enormous, policymakers were determined that the taxpayer should not be the one to shoulder this burden, when there were others around who had both contributed to the problems and profited from them. In the dying days of the Carter administration, Congress therefore adopted in CERCLA a law which combines a draconian liability regime, to maximise the contribution made by those companies or other organisations who had the closest connection to particular sites, with a collective funding mechanism, financed by industry, to provide resources to pay for government implementation and intervention, where that proved necessary. In this form, CERCLA provides a kind of catch-all regime where other legislation is unable to attribute liability effectively. Its scope is very broad and the liability under it is often almost absolute.

Its primary focus has been on historic contamination, although a significant proportion of the cases pursued under it have included events which either occurred or continued after the law came into force on 11 December 1980. There is some doubt nevertheless about its application further into the future. Some experts believe that it will play a much smaller role in the handling of future damage, as the progressively wider reach of regulatory programmes leaves fewer and fewer incidents classified as uncontrolled, and as more sites are cleaned up under state mini-CERCLAs. By this view, the corrective action programme under RCRA is

expected to take over as the dominant clean-up mechanism in the future, ultimately dealing with a far larger remediation effort than anything yet seen under Superfund. Prosecution of this clean-up campaign has been delayed over many years, but in late 2000 there were some 3,700 facilities in the RCRA corrective action pipeline, with that number expected to grow considerably in the years ahead (compared with 1,200 on the federal Superfund list and several thousand more under state superfund programmes).

Given the enormous flexibility of CERCLA liability, however, its success in securing huge sums of money from private responsible parties (an estimated $16 billion (euro 17.9 billion) by 1999) and the fact that the most important new law of recent years in this field, OPA, was modelled on CERCLA, there has to be some scepticism about the prospect of Superfund-type liabilities fading away.

The CERCLA-Superfund regime begins with a broad definition of actionable damage, defined in terms of a release, or a substantial threat of a release, into the environment of a hazardous substance, or any pollutant or contaminant which may present an imminent and substantial danger to public health or welfare. Each element within this definition is itself broadly defined and has often been further extended by the courts. Two kinds of response actions are authorised: emergency, short-term "removal actions" (eg, clean-up of most obvious spillage, fencing off of a dangerous area, drainage controls to prevent further migration, provision of alternative water supplies, etc) and long-term, ideally permanent, "remedial actions", designed to restore a site to a good condition or to contain any remaining hazardous substances permanently.

There are several methods for identifying sites, the main ones being: compulsory information requests from potentially responsible parties (PRPs), backed up by search and entry powers; and stringent reporting requirements on PRPs upon discovery of any release of hazardous substances, subject to severe penalties for non-compliance (fines of up to $25,000 (euro 28,000) per day per violation plus up to three years imprisonment if the failure was knowing). From this information, and any other notifications from state authorities or others, a database (CERCLIS) is compiled of sites that may need a CERCLA response. Listing on that then leads to investigation and assessment, including a detailed Hazard Ranking System (HRS) to select the highest priority sites for inclusion on the National Priorities List (NPL). Emergency removal actions can be done by the EPA without a NPL listing, but long-term remedial actions can not. The whole of this is regulated under a National Contingency Plan (NCP), which prescribes the procedures that must be followed from the initial search for sites through to a long, multi-step process for handling remedial action at an NPL site – the latter involving close supervision from the authorities and several rounds of public consultation.

Clean-up standards under CERCLA have, at least on paper, been very demanding, although the original Act gave relatively little guidance on them. Overall, there is a presumption in favour of permanent treatment, as opposed to offsite disposal or containment. The 1986 amendments added a controversial provision on this, requiring remedial actions to protect health and the environment, and to meet "applicable or relevant and appropriate requirements" (known as ARARs). The concept of ARARs has often been interpreted in an exhaustive way, encompassing any federal or state requirements and demanding compliance with the most stringent, but this has raised numerous problems in terms of cost and feasibility. As with the multifunctionality standard recently abandoned in the Netherlands (see section on EU Member States), by no means all Superfund clean-ups were meeting

these objectives. As a result, the EPA has taken steps to review the standards as part of its administrative reforms to make the programme work better. The remediation process remains an onerous one nevertheless, both in the procedural steps that have to be followed and in the determination of the authorities to keep the liable parties permanently on risk, even after completion of a clean-up, through compulsory "re-opener" clauses in completion documents, allowing the authorities to revisit the liability in the event that the site deteriorates at a later date or other information indicates a need for further remediation.

In order to pay for several kinds of government action under the regime, there is a Hazardous Substance Response Trust Fund, financed by a range of taxes on business, initially confined to the oil and chemical sectors, but supplemented in 1986 by a general environmental tax on a broad universe of companies. Those sums are then topped up by recoveries from liable parties. The size of the fund was originally set at $1.6 billion (euro 1.8 billion) over five years, at a time when Congress envisaged about 400 sites entering the system, but raised to $8.5 billion (euro 9.5 billion) over five years in 1986, when it became apparent that there were far more sites than anticipated, and continued at about the same level in 1991, with $5.1 billion (euro 5.7 billion) over three years. Subsequent monies, however, have been subject to annual appropriations by Congress because, in the course of repeated failures since 1994 to agree legislative reforms or to re-authorise the programme, the taxation provisions expired on 31 December 1995.

Liability under CERCLA is strict, joint and several, and retroactive, although none of those terms is included in the statute. References to strict and joint and several liability were deleted during the Act's passage through Congress. Instead, the text defines the basic liability standard as that obtaining under s.311 of the (previously enacted) CWA, which is strict. Joint and several liability was upheld by the courts, on the basis of the legislative history of the Act which was deemed to show that Congress had intended liability to be "determined from traditional and evolving principles of common law". Those principle involve joint and several liability unless a defendant can show that his harm is divisible from the rest and that such division provides a reasonable basis for apportioning liability. The retroactive application of the liability rules to PRP conduct which pre-dated adoption of the Act has also been upheld by the courts, which have ruled that the statute's wording makes the date of the activity irrelevant, and there are no limitation periods to stop subsequent enforcement action (apart from a limitation on the period between the completion of a clean-up and the launching of a cost recovery action).

Liability is for: response costs and associated expenditures by government authorities, Indian Tribes or any other party, consistent with the NCP; damages for injury to, destruction of, or loss of natural resources; and costs of any health assessment or health effects study carried out as specified under the act.

CERCLA does not cover personal injury or property damage, claims for which have to be pursued under common law or other statutory rules. There were provisions for a cause of action of this kind in drafts of the act, but they were deleted before its approval. In return, Congress ordered the preparation of a study on the adequacy of existing common law and statutory remedies. That study led to a report in 1982, but not to any legislation. CERCLA has, however, provided some help to plaintiffs who wish to bring claims for traditional damage, by creating the Agency for Toxic Substances and Disease Registry (ATSDR), which conducts health assessments near Superfund sites and prepares toxicological profiles of hazardous substances found there, and also by unearthing large amounts of information

about the responsible parties' activities at such sites, which can serve as evidence in civil actions. In addition, private parties are able to bring actions directly under CERCLA against other PRPs, either for contribution or for recovery of costs incurred in fulfilling an approved response action.

The rules for natural resource damages (NRDs) are different from those covering response (clean-up) costs. Natural resources are defined as "land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources" belonging to, managed or controlled by government entities, foreign governments or Indian Tribes. Damages that are recoverable include costs of restoring, rehabilitating or replacing injured natural resources or acquiring equivalent resources, the cost of services provided by such natural resources, or the lost use value of the natural resources until they are restored, etc. The same categories of party are potentially liable and the same statutory defences apply but, unlike response costs:

- standing to sue for NRDs is restricted to trustees of the federal or state governments, and Indian Tribes;
- there can be no recovery until there is an actual release of hazardous substances – a threatened release is not enough;
- NRDs can be recovered before the relevant costs are incurred – whereas response costs can not (under s.107 – although clean-up action can be ordered under s.106);
- in principle, liability for NRDs is not retroactive, inasmuch as they are not recoverable where both the harm and the causative releases occurred wholly before CERCLA's enactment date – although courts have interpreted this narrowly, as allowing full or partial recovery where any releases or harm were partly after that date; and
- liability of each PRP is capped at $50 million (euro 56 million) per release or per incident, provided there is no breach of standards nor wilful misconduct or wilful negligence – although prolonged events may involve more than one incident.

For all kinds of costs covered by CERCLA, liability is assigned to four categories of responsible party:

- current owners and operators;
- past owners and operators (where releases occurred during their tenure);
- persons who arranged for disposal or treatment of the offending substances (often known as "generators", although it may include parties acting as brokers); and
- transporters who selected the site for disposal or treatment.

The main factor which led to large numbers of parties being caught in the liability net was the inclusion of hazardous substance generators. The sites which have involved several hundred PRPs have virtually all been ones which received wastes or other materials from off-site customers, with those customers now being held liable for the response costs at the site. CERCLA liability spreads wider than that, however, for two reasons. First, because the act includes a very broad definition of a "person" who can be a member of one of the liable categories, including "an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity" and various government bodies. Second, because case law has led, with varying frequency, to a wide range of secondary parties being held liable, including successor companies, parent companies, shareholders, directors, officers and employees, trustees and executors, lenders, joint venture partners and others. Some courts have ruled, in relation to parent companies and shareholders, that the statutory wording

overrides the corporate form, while others have confined such extensions to established principles for "piercing the corporate veil".

In principle, the burden of proof remains with the plaintiff (whether government or private party), but neither fault nor, in any detailed sense, causation has to be proved. The burden on the plaintiff is limited to showing a causal connection between a release or a threatened release and response costs. There is no need to establish a direct link (fingerprinting) between the substances released or disposed of by a specific defendant and the response costs, nor even to identify specific substances at a site which can be traced to a defendant; it is enough merely to show that qualifying substances were consigned to the site by the defendant, that substances of that type were found at the site and that offending substances of any type were released from the site. Nor is there any minimum threshold of quantity or concentration below which a consignment of materials to a site is exempt. In the case of owners or occupiers, the burden is simply to show ownership or occupation during the appropriate periods (at the time of enforcement or at earlier times when substances were disposed of). In addition, once the government's relatively simple burden has been met, the burden of proof then shifts to the defendant if he wishes to show grounds for exemption, for a reduced share of liability or for an alternative clean-up approach at the site, or to contest any other aspect of the liability.

The law provides two main mechanisms for the government to secure response costs from PRPs: unilateral administrative orders (s.106(a)) or cost recovery following action financed from the Trust Fund (under s.107). As in other countries, after the first few years, the balance moved decisively in favour of administrative orders (the "enforcement first" policy), requiring PRPs to carry out clean-ups and pay for them themselves, rather than spending Trust Fund money and then suing for its recovery. Efforts are made to achieve a voluntary settlement in advance of serving a s.106 order, often successfully, but the act also provides a threat of treble (punitive) damages, in addition to response costs and a possible $25,000 a day fine, if a defendant fails to comply with such an order. In addition, one of the most severe provisions in the Act prohibits any "pre-enforcement review", or hearing, concerning the PRP's liability before completion of the remedial action, which is normally many years ahead[1].

The three statutory defences to CERCLA liability – act of God, act of war and act or omission of a Third Party not connected with the defendant – have each been so narrowly construed as to be almost worthless. In the case of Third Party intervention, the courts have required that the relevant release or threat of a release, and any resulting damage, was caused solely and exclusively by the Third Party, a standard which is rarely met. In the 1986 reforms, an "innocent purchaser" defence was added, although that too is very demanding. To qualify for it, the defendant "must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" and there must be no sign either of a discounted sale price or any reasonably ascertainable knowledge of the presence of contamination on the property.

[1] This was added to the regime in order to stop litigation holding up remedial action. It means effectively that no PRP can afford to disobey an order. No court has jurisdiction until an order is enforced. If a PRP refuses to implement one, rather than enforce it, the EPA would conduct the clean-up using Trust Fund money. The PRP would risk incurring daily fines for the duration of the clean-up (typically about 10 years), while the EPA did the work, and then face a cost recovery action under s.107. The sums of money involved make this implausible.

There are exclusions for petroleum (covering oil and its fractions, provided they are not adulterated or contaminated by contact with other pollutants), for nuclear activities and for agricultural pesticides, all of which are subject to other strict liability regimes. There is a secured creditor exemption, designed to protect lending institutions from being held liable on the basis of taking a security interest in their borrowers' property, which led to considerable litigation and, ultimately, a separate law to bolster the position (see below).

There is also a federally permitted releases exemption, which specifies that clean-up of damage resulting from certain kinds of releases subject to federal permitting should be exempt from cost recovery under CERCLA, although not from liability or obligations under any other federal, state or common law rules. This has been exceptionally narrowly construed by the EPA and represents something very much less than a permit compliance defence. It offers no protection in actions brought under common law, state laws or other federal statutes. It does not apply to waste consigned legally to a Superfund site, nor to anything authorised under state laws or regulations, nor to any releases exempted from permitting under other statutes, and it may be voided by a single instance of non-compliance in the defendant's record. It also seems to apply only to cost recovery actions under s.107 of CERCLA and not to administrative orders under s.106. In some cases, it may nevertheless offer limited protection; for example, by deterring plaintiffs from bringing cost recovery actions in cases where the releases occurred relatively recently.

As far as apportionment is concerned, in interpreting joint and several liability, the courts have almost always ruled that harm at Superfund sites is not divisible, because the substances linked to different PRPs have mixed and mingled in ways that no longer allow rational separation. Nevertheless, where PRPs have been prepared to reach voluntary settlements, there has been a clear trend towards division of liability according to the commonly cited criteria (volume, toxicity, time on site, substance mobility, etc). A sophisticated system of settlement procedures has developed, involving instruments such as consent decrees, covenants not to sue and contribution protection for settling parties, all subject to judicial approval. By no means all PRPs have been happy with the results, but equally this has largely avoided situations where a single, or a small number of, PRPs with substantial resources ("deep pockets"), but only a minimal role in causing the harm, have had to shoulder most of the liability.

On the other hand, there has been much controversy about who pays for orphan shares. The normal solution under joint and several liability is to reassign such shares to the remaining liable parties (in order to ensure that the victim is properly compensated). That has been the most common approach under CERCLA. The Act, however, contains a provision allowing "mixed funding" at sites, with the costs being shared between the PRPs and the Trust Fund, where some of the PRPs either can not be found or are unable to pay. In recent years, the EPA has increasingly allowed this, at part of a general attempt to improve the efficiency of the programme (see below).

Despite the settlement procedures, a large number of private contribution and cost recovery actions have been pursued by PRPs convinced that others should have paid, or paid more[2]. In some cases, these have involved attempts by major PRPs to draw into the liability net hundreds of very minor waste generators, who face large defence costs irrespective of the

[2] In a contribution action, liability is not joint and several; a plaintiff can only seek a proportionate share from another PRP. Cost recovery actions can only be brought by parties who are not themselves PRPs.

size of their liability. The EPA has taken steps in recent years to strengthen protections for such minor contributors, with some success (see below). The aggregate legal costs arising from the regime, according to reputable studies, have in any case been substantially lower than is sometimes alleged – probably around 10-20%. That is no comfort to smaller PRPs whose defence costs have frequently represented much higher percentages of their overall liability, nor to the parties engaged in an enormous litigation battle over consequential insurance claims, where very high percentages of insurance revenues have been spent on resisting cover claimed under old general liability policies which insurers argue excluded aspects like gradual pollution and responses to statutory orders. It is worth noting, however, that the success of large numbers of insureds in overcoming insurer resistance to such claims in many cases (subject to state, rather than federal, law) has relieved some industrial companies of a considerable part of their CERCLA liabilities, in a way that might not be repeated in European jurisdictions.

In recent years, in response to widespread criticism of the performance of the Superfund programme, there have been repeated attempts in Congress to enact legislative reforms. These have failed largely because of deep divisions about the basic liability rules. Although some powerful industrial groups have argued for deletion of key elements such as retroactive and joint and several liability, such changes have been resisted by the EPA and by a majority of Congressional representatives on the grounds that they would undermine the polluter pays principle. A key factor in this has been the opposition of some companies in high-risk industrial sectors who face relatively low Superfund liabilities – either by luck or because of superior waste management practices in the past – and now resent the idea of paying through taxation for the mess left behind by their competitors.

In the absence of legislative reform, the US government has instituted a wide range of administrative reforms to try to improve the efficiency of the programme. These have covered many different aspects of the regime, from enforcement and liability issues to risk assessment and remedial technologies. Amongst the most important recent developments have been:

- a major programme to remove liability obstacles to redevelopment of brownfield sites – including protections for purchasers and developers;
- increased use of provisions to reduce or eliminate the liability of minor contributors at Superfund sites (so-called *de minimis* and *de micromis* parties);
- similar protection for municipal government PRPs, whose contribution to sites was mostly non-hazardous solid waste (containing small concentrations of hazardous substances), but in such large volumes that they sometimes faced large liabilities;
- standard or "presumptive" remedies and other measures to simplify the remedy selection process at sites whose conditions are similar to others elsewhere; and
- greater attention to cost and future use in setting clean-up objectives.

On one issue, lender liability, there has been legislative reform, with the adoption in 1996 of the Asset Conservation, Lender Liability, and Deposit Insurance Protection Act. This strengthens the secured creditor exemption in CERCLA, by specifying in more detail what lenders can and cannot do without incurring liability in connection with borrowers' activities. The new Act also extends these protections to the underground storage tank (UST) regime under RCRA. It was passed after several years of consultations, a detailed (160+ pages) regulatory rule adopted by the EPA in April 1992, and the overturning of that rule by a

senior court in 1994, in a legal challenge brought by the chemical industry and some municipalities.

The brownfields programme is now playing an increasingly prominent part in this field (although many of the sites being assisted would probably have come under the state superfunds, rather than the federal regime). Conversely, the level of legal activity dealing with traditional CERCLA clean-up actions seems to be declining. As the programme reaches a more mature stage, many of the initial battles appear to have been resolved and clean-up initiatives are advancing towards completion, at least of the physical engineering stage (further operations and maintenance is required after that stage). As of January 2001, 759 of the 1,229 sites currently on the NPL had finished physical clean-up, with 232 more having reached the next stage of final deletion from the list.

The brownfields worries, as in other countries, have been about fear of liability exposure paralysing development of old industrial and urban properties, causing serious problems for economic regeneration of those areas. In that context, the various protections now being offered to parties willing to invest in such sites may well set a pattern for future liability rules across a wider field.

On the biodiversity damage side, the natural resource damages (NRD) programme, often described as the sleeping giant of Superfund, has not expanded in the way that some people either feared or hoped 10-15 years ago. A relatively small number of cases is being pursued, some involving substantial costs, but the overall scale of the programme remains limited. Detailed regulations on assessment and valuation of lost or injured natural resources have been issued by the Department of the Interior (DOI), for CERCLA NRDs, and by the National Oceanic and Atmospheric Administration (NOAA), for OPA NRDs. Both include some use of the controversial contingent valuation method. In both cases, assessments carried out under the regulations are given the force of a rebuttable presumption under the statutes, shifting the burden of proof to the defendant if he wishes to contest the assessment.

Sums recovered under an NRD claim can only be used for preparation of an assessment, and for restoration or replacement of an injured natural resource, or acquisition of an equivalent, although OPA allows some excess to be paid into the Oil Spill Liability Fund (the OPA version of the Superfund Trust Fund). The main objective of an NRD restoration is a return to baseline conditions, but it may also include compensation for the interim loss of the injured resources while they are being repaired. CERCLA also provides for Ecological Risk Assessments (ERAs) to be included in the remedial investigation phase of a Superfund clean-up. These review the effects of the offending hazardous substances on the eco-systems surrounding the site.

Of the other main federal statutes, liability under RCRA and the CWA is also strict, joint and several, and largely retroactive, and carries similarly narrow defences, but the universe of liable parties is, in principle, narrower, focusing on the owner or operator of the facility causing or responsible for the harm. The OPA definition of a liable party is wider than that, but still narrower than CERCLA, covering owners or operators of any structure, equipment or device which is used for exploration, drilling, production, storage, handling transfer, processing or transport of oil. On the other hand, in addition to clean-up costs and NRDs, OPA allows claims for economic loss caused by damage to property or natural resources, opening the possibility of multiple business interruption claims from private parties.

More generally, private claims for personal injury and property damage in the US have to be brought under the common law. As in other common law countries, this entails a mixture of strict and fault-based liability, depending on the cause of action. In the US, this is complicated by the fact that the common law has developed differently in different states, so that certain actions have a much higher chance of success in some states than in others. In environmental cases, strict liability for damage to property is available in most states under one or more of three causes of action: nuisance, trespass and the rule in *Rylands v Fletcher*, which has been broadened in some states as liability for ultra-hazardous or abnormally dangerous activities.

The variations between state jurisdictions are considerable, but the general position seems to be that, in cases involving a serious environmental incident, some form of strict liability action for property damage is often available, provided causation is reasonably clear. Larger companies which are responsible for an incident of that nature will commonly settle claims in advance of litigation, in the knowledge that the courts in such cases may easily alleviate the plaintiff's burden of proving causation once *prima facie* evidence is presented.

Personal injury claims in environmental cases seem to face much more difficult obstacles. As in most countries, proving causation on the basis of exposure to a pollutant, using clinical or epidemiological evidence, is extremely difficult unless the exposure is of an overwhelming nature. These are also normally negligence claims, requiring the plaintiff to prove fault, in the form of a failure in a duty of care or some other wrongful act. Claimants in the US have several advantages over their counterparts elsewhere, notably the extremely wide discovery rules which allow disclosure of documents from defendants which might be difficult to obtain in other countries. That process is significantly enhanced by the far-reaching information disclosure requirements in many US environmental statutes and programmes, notably the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), the annual publication of the Toxics Release Inventory (TRI) and similar requirements at state level under laws such as California's Proposition 65. Plaintiffs in common law actions also have a constitutional right to a jury trial, with its tendency to sympathise with victims, and the possibility of securing punitive damages, sometimes many times greater than the underlying compensation award. There is no defence in terms of permit compliance and, in addition, some states have adopted relatively broad concepts of harm, including infliction of emotional distress, fear of cancer or other diseases, medical monitoring costs and, in property damage cases, stigma damages (dimunition in the value of property). Offsetting some of this, numerous large awards are overturned on appeal, with appellate courts much more circumspect than juries about such judgments. Even in cases where defendants succeed, however, they often incur large defence costs and at least some harm to their reputations, so there is a strong incentive to settle claims.

As far as access to justice is concerned, many US environmental statutes contain provisions for citizen suits, which allow any person (or group) to seek injunctive relief or civil penalties from any party seen to be in violation of the law. These provisions began with 1970 amendments of the Clean Air Act and have been included in almost all major environmental laws since then (the CWA, RCRA, CERCLA, EPCRA, the Endangered Species Act, etc). Private citizens' standing in environmental cases was also reinforced in a landmark 1972 ruling from the US Supreme Court (*Sierra Club v. Morton*), in which the court recognised that environmental well-being, like economic well-being, could be a basis for standing under the Administrative Procedure Act. Since that period, specialist groups have emerged to organise citizen suits and there has been extensive litigation in this form. The provisions in

different statutes vary but, on the whole, both the regulatory authorities and the defendant have to be informed some weeks in advance of a plaintiff's intention to bring such a suit, with the authorities allowed to pre-empt the citizen suit by intervention of their own. The burden of proof is on the plaintiff to show that a defendant is in violation of a statutory norm and that the violation is either continuing or intermittent. That is not always easy to do, despite a stream of detailed performance and emissions data required to be published by most regulated companies. During the 1990s, several senior court judgments seemed to restrict environmental groups' chances of success in such actions, but an important ruling from the US Supreme Court in January 2000 (*Friends of the Earth v. Laidlaw*), concerning an action brought under the CWA, has been widely viewed as reversing that trend. The court decided that a citizen suit could proceed even when the defendant has since brought his operations into compliance with the relevant standard and even though the plaintiffs had demonstrated only reasonable concern, rather than actual injury to the environment.

CANADA

The majority of environmental liability rules in Canada are under provincial jurisdiction. Federal laws do contain some provisions, however. Both the recently amended Canadian Environmental Protection Act (CEPA 1999) and the Fisheries Act include enforcement powers, as well as penal sanctions, to deal with pollution incidents and other harm to the environment, where these concern activities and areas under federal jurisdiction (federal property, transport of hazardous waste, regulation of toxic substances, etc). CEPA compliance orders, for example, can require an immediate stop to a violation of the Act, action to prevent such a violation occurring or action to correct the consequences of a violation. More powers of this kind, to prevent and respond to biodiversity damage, are proposed under the Species at Risk Act (SARA) currently being considered by the Canadian Parliament.

Federal policy also plays an important role in the disclosure of information about environmental damage, through measures such as the National Pollutant Release Inventory (NPRI), which allows communities to identify pollutant emissions from local facilities, and so-called whistleblower protections for people who report offences under CEPA and some other statutes. CEPA also contains important access to justice provisions, including confirmation of a common law right to sue for personal loss as a result of a CEPA violation and a right to request investigation of an alleged offence which has caused significant harm to the environment. In the latter case, if the Minister fails to conduct the requested investigation within a reasonable time or otherwise responds unreasonably, the applicant is allowed, subject to a limitation period of two years, to bring an Environmental Protection Action in the courts. Various kinds of relief can be sought in such actions, including orders to cease the offence or to negotiate a plan to correct or mitigate the resulting harm "to the environment or to human, animal or plant life or health".

In addition, there are a number of federal initiatives that help to co-ordinate provincial approaches on key issues, mainly through an inter-provincial ministerial forum, the Canadian Council of Ministers of the Environment (CCME). Among other things, this has produced a set of soil quality guidelines which most provinces have incorporated into their

contaminated land regimes. These include generic, numerical criteria for some 20 high-risk contaminants, adjusted for two kinds of land use: commercial/industrial and residential.

At provincial level, several provinces have been revising their contaminated land rules in recent years, notably Ontario and British Columbia (BC), both of which have had very public debates about policy in this field. There are significant differences between the provinces, which are too complicated to review in detail. For the purposes of this report, the BC regime can serve as an example. BC is Canada's third largest province, by both population and economic activity. In some respects, its liability rules are the most severe in Canada, but there are other aspects, such as clean-up standards, where its approach is more flexible than some other provinces, and there are also signs of the rules in other provinces becoming increasingly stringent.

There was prolonged debate in BC in the first half of the 1990s, about a wide range of policy options, before its Waste Management Act 1996 (WMA) and the implementing Contaminated Sites Regulation came into force on 1 April 1997. The outcome is a regime which attempts to balance a severe liability standard with detailed exemptions and protections designed to focus liability on those most responsible for the problem (although not necessarily for its original cause). Its provision of site-specific and so-called "matrix" clean-up standards, alongside the national (CCME) soil quality criteria, was unusual when it first appeared.

Another key feature of the regime is that, unlike the US Superfund regime, the main focus is on independent remediation within the framework of the Act, rather than government-ordered clean-up. The intention is to give private parties who conduct remedial work a statutory (civil law) cause of action, which makes it easier for them to recover their costs from the responsible parties than it would be under traditional common law rules. There is less need to prove causation, for example, since the liability trigger is simply membership of one of the classes of responsible party defined in the Act. Other tools to assist private litigants include easy access to site information, a system for independent verification of remedial actions (with relatively little oversight by the authorities) and the option of an expert allocation panel to help adjudicate liability disputes. Most of the legal action under the WMA has so far been brought by private parties. The state retains the option of serving an administrative order if necessary, but up to now this has reserved for a very few cases, involving major contamination. The regime is still only four years old, however, so that pattern may change.

At the core of the regime is an inventory known as the Site Registry, where information on site assessments, investigations and remedial actions is recorded for open public access (including availability online). There is a five-stage procedure for managing sites (identification and assessment, investigation and decision, planning, remediation and evaluation/monitoring), with public consultation built in before remedial plans are finalised and elsewhere in the process. Once a site has been selected as needing remediation, the timing is dependent upon the severity of the actual or potential impacts, with some sites given a much lower priority than others. Where remedial action is required, the work can proceed either under a voluntary agreement or by a remediation order, where the responsible parties are not willing to agree to what the authorities request. Voluntary agreements cover several aspects of the work, including: responsibility and contributions of the relevant parties, information disclosure, financial guarantees, schedules and remediation objectives.

A key element in the BC approach to remediation is the inclusion of flexibility in the remediation standards. There are four types of standard, the first three of which are based on quantitative (parts per million) criteria: generic numerical standards, matrix numercal standards, site-specific numerical standards and risk-based standards. Generic numerical standards are based on the nationally agreed CCME environmental quality criteria for soil, groundwater and surface water. Matrix standards separate health and environmental protection components to allow a more flexible numerical judgment. Site-specific standards, use the same models as the matrix ones, but add in local factors, to give a numerical standard unique to a particular site. Risk-based standards look solely at health risks and require a separate environmental impact assessment if they are to be adopted. Parties conducting clean-ups can choose which of these approaches to use, provided they remain within the statutory guidelines. This strategy emerged in response to concerns during the legislative consultations that use of generic standards alone, which is the practice in some other provinces, would be too rigid and less cost-effective in terms of protecting health and the environment.

When the remedial work at a site is finished, the authorities issue completion documents in one of two forms, depending on which clean-up standards have been used: a certificate of compliance is issued if numerical standards have been achieved and a conditional certificate of compliance, where the work has been guided by risk-based standards. In either case, further financial security may be required. As in other countries, the authorities also reserve the right to "re-open" the issue if conditions change in the future; ie, new information about a person's liability emerges, new scientific information requires a change in standards or commitments by the parties to manage residual contamination at the site are not fulfilled.

The scope of the regime is more or less unlimited. The term "waste" is used loosely, to include: air contaminants, litter, effluent, refuse, biomedical waste, special wastes, and any other substance designated by the authorities, "whether or not the type of waste…..has any commercial value or is capable of being used for a useful purpose". Terms such as "air contaminant" and "effluent" are broadly defined to include anything capable of injuring health and safety, injuring property or any life form, interfering with visibility or with the normal conduct of business, causing material physical discomfort to a person or damaging the environment. "Environment" is equally broad and "pollution" is defined as, "the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment". A contaminated site is defined in terms of an area of land where the soil, groundwater underlying it, or the water and underlying sediment, contain either special waste or any prescribed substance in quantities or concentrations exceeding the given criteria, standards or conditions.

Liability is for "reasonably incurred costs of remediation" of a site, whether incurred on or off the site. Remediation itself is defined in a very open-ended way[3] and its costs are deemed to include, without limitation, everything from preparing a site profile to legal and consultant costs of seeking contributions from other responsible parties, and any fees imposed by the authorities. The liability standard is absolute, retroactive and joint and

[3] "Remediation" means "action to eliminate, limit, correct, counteract, mitigate or remove any contaminant or the negative effects on the environment or human health of any contaminant", including, but not limited to, all the stages of the prescribed clean-up procedure, from site investigation to post-completion monitoring, plus any other action that the authorities may prescribe.

several, with Ministry notes explaining "absolute" as meaning, without a defence of due diligence.

The liable parties are first given a very broad definition, then narrowed by a series of qualifications. The initial list consists of:

- current owners or operators of a site;
- previous owners or operators;
- producers and transporters of a substance which caused contamination;
- any of the above for contamination that migrates to a secondary site; and
- a person who is in a class designated in the regulations as responsible for remediation.

Unusually, the list of parties who are responsible also includes secured creditors (ie, lenders), in a complicated clause which starts by stating what would make them liable (control or ownership), then provides a reassuring list of activities (to do with protecting a security interest) that would not[4]. The result is broadly in line with the rule under the US Superfund regime, but the inclusion of lenders among the potentially liable parties must serve as a warning to financial service providers to be especially careful. However, the accompanying Contaminated Sites Regulation, which implements the regime, includes more detail on the scope of exemptions from liability for a range of financial services professionals, including sureties, insurers and insurance brokers, secured creditors, receivers and trustees.

The clause in the Act on "persons not responsible" contains a mixture of defences and exemptions. The first three are the usual narrow defences: act of God, act of war, and act or omission of a Third Party (other than employee, agent or person with a contractual relationship), all subject to the defendant exercising due diligence, the standard for which seems likely to be set at a high level.

Innocent owners or operators are protected in two ways: a standard innocent purchaser/occupier defence (no knowledge of the contamination at the time of acquisition or first occupation, despite all appropriate inquiries; no transfer without disclosure of any known contamination; and no actions that cause or contribute to the contamination) and an exemption for any owner or operator who arrived at the site when it was not contaminated, then did not handle any offending substance in a way that, wholly or partly, caused the contamination. These too are roughly equivalent to the Superfund position. As in the US regime, the standard for the innocent owner defence is not easily met[5].

[4] A secured creditor *is* responsible if he either "exercised control over or imposed requirements on" anyone regarding the handling of the offending substances in such a way that it caused the site to be contaminated, or becomes the owner. He *is not* responsible, however, if he acts primarily to protect his security interest including, but not limited to, participating in purely financial matters related to the site, having the capacity to influence site operations but not exercising that capacity, imposing requirements on anyone if those requirements do not have a reasonable probability of causing or increasing contamination, or appointing someone to investigate the site in order to decide what to do as a secured creditor.

[5] The Ministry notes explain that the test of "all appropriate inquiries", required for this defence, will take account of any personal knowledge of the previous owner or operator, any discount in the acquisition price and any commonly known or ascertainable information about the property, as well as obvious or easily detectable evidence of contamination.

The liability of substance producers and transporters is significantly eased by a broad exemption, if the site owner or operator was authorised to accept the substance and gave permission to deposit the substance at the site. The Regulation elaborates further: offering a wide immunity to transporters if they acted properly and did not control the subsequent handling of the waste, or were misled about the pollutant concentrations in shipment of contaminated soil; and exempting producers if properly consigned substances are spilled or discharged by a transporter in transit.

The other exemptions are for: a government body that involuntarily becomes an owner (unless it caused contamination); parties providing assistance or advice on remediation work at the site (unless they are negligent); an owner or operator where the site was contaminated solely by migration from another site (not owned or operated by that person); an owner or operator whose site was contaminated solely by natural processes; government bodies that own roadways or rights of way for sewers or water at the site; anyone possessing completion documents for a site, where another person proposes to change the site's use or to undertake further remediation; and any other class of person whom the regulations designate as not responsible.

The Act explicitly rules out any defence in terms of permit compliance or authorisation, going to some length to emphasise this point[6]. There is also a detailed clause providing immunity for government bodies, ministers, officers, employees and agents, for any acts, omissions, performance of powers, etc, unless they otherwise fall into one of the categories of responsible party or act in a dishonest, malicious or wilfully wrongful manner.

Finally, there is an important provision protecting minor contributors from joint and several liability. If the authorities designate someone as a minor contributor, they are required to determine what portion, if any, of the remediation cost is attributable to that person, and to cap their liability at that amount (including protection from civil actions brought by other parties). The test for minor contributor status includes, not only assessment of the applicant's role in causing the contamination and the resulting remediation costs, but also a decision about whether it would be "extremely harsh" to name the applicant as being jointly and severally liable along with the other responsible parties.

In order to assist apportionment decisions in multiple party cases, the courts are required to consider various equitable factors if the action is between two or more responsible parties, for cost recovery. The Act also allows the government to appoint up to 12 experts to act as allocation advisers. The authorities are empowered, if requested by any of the parties, to set up an allocation panel, consisting of 3 of those advisers, to give an opinion on that person's liability, minor contributor status and contribution to the contamination and the consequent costs. The panel's judgment must be based on a list of equitable factors (similar to the Gore factors used in the US). The panel's opinions are not binding.

The Act includes sanctions for numerous offences, including failure to comply with a permit, failure to report a spill or release of waste into the environment and other compliance failures. The penalty for an offence includes a fine of up to C$1 million (euro 0.7 million),

[6] Art.27(3) states: "Liability under this Part applies: (a) even though the introduction of a substance into the environment is or was not prohibited by any legislation if the introduction contributed in whole or in part to the site becoming a contaminated site, and (b) despite the terms of any cancelled, expired, abandoned or current permit or approval or waste management plan and its associated operational certificate that authorizes the discharge of waste into the environment."

with the option of imposing that fine on a daily basis while the offence continues. For any intentional causing of damage or loss to the environment risks a fine of up to C$3 million (euro 2.1 million) and/or imprisonment for up to 3 years.

The first senior court judgments under the WMA have appeared during 2000[7]. Among other things, these have confirmed that: previous regulatory approval of a site's condition upon closure, before the passage of the Act, does not prevent the authorities from re-opening the liability by issuing new remediation orders under the Act; parent companies can be deemed liable if they participate too closely in the activities of a subsidiary which is a responsible party; and a landlord who is a responsible party because of his knowledge of a tenant's contaminating actions may still, in effect, be relieved of any liability for the costs if the court applies a "zero" share allocation in its apportionment decision on the basis of equitable factors. One judgment[8], however, caused confusion in the legal community by ruling that private party litigation for remedial costs under the WMA could not proceed until the authorities had officially declared the site to be contaminated – this was widely seen as threatening to undermine the strategy of promoting independent remediation without prior recourse to administrative proceedings.

There is not the scope here for detailed comparison with other Canadian provinces, but laws similar to BC's WMA exist right across Canada. Although there are some differences concerning the boundaries of the liability net and other important aspects, these are mostly a matter of degree.

The liability rules in Ontario (Canada's largest province), for example, under the Environmental Protection Act and the Water Resources Act, were sharply tightened in 1990, through an amendment bill known as Bill 220, following a public outcry at an uncontrolled tyre fire, caused by vandalism at an illegal disposal site in Hagersville. The owners of the site had previously received administrative orders from the provincial authorities, but these were under appeal and had not been enforced. Among other things, Bill 220 expanded the universe of liable parties, widened the reach of administrative orders for both remediation and cost recovery, and increased the risk of lenders being held liable as having "charge, management or control" of a property (now or in the past). On the last of those points, the Bill did not provide a secured creditor exemption along the lines of the US or BC regimes (see above).

Two other bills have potentially increased the liability risks in Ontario since then: Bill 82, in 1998, strengthened enforcement powers under the provinces' main laws and increased the available penalties, and another Act passed in 1999 (the Ministry of Health and Long-Term Care Statute Law) could open the way for the government to sue for public health care costs as a result of illness or injury caused by pollution incidents. Ontario also has an Environmental Bill of Rights which contains requirements for public participation in policymaking, rights to demand investigation of an alleged violation of an environmental law, "whistleblower" protection for employees reporting environmental violations by their employers and increased access to justice through a cause of action to protect public resources and wider standing for claimants under public nuisance.

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[7] *O'Connor v. Fleck* (2000 BCSC 1147) and *Beazer East Inc. v. Environmental Appeal Board* (2000 BCSC 1698).

[8] *Swamy v. Tham Demolition et al.* (2000 BCSC 1253).

Even a province such as Alberta, which has prided itself on a de-regulatory economic climate in recent years, has a strict liability regimes (in this case, under the Environmental Protection and Enhancement Act) for damage to aspects of the environment or health. On the other hand, Ontario has, like BC, included a risk-based option in its remediation standards and, more recently, has appointed a panel of experts to advice the government on ways to reduce the legal, financial and other obstacles to redevelopment of brownfield sites, an issue which has been receiving growing attention across Canada.

Traditional civil law actions, for personal injury or property damage, are governed by common law rules in Canada, outside of Quebec. The lines of precedent vary to a limited extent from province to province, but overall they are still closely aligned with developments in UK law. Property damage claims are mostly brought under strict liability rules in nuisance or the rule in Rylands v. Fletcher (owner liability for the escape of dangerous things, where land use is "non-natural"). Compliance with permits is no defence, but the plaintiff retains the burden of proving causation and a defence of reasonable foreseeability of the harm is usually available. There seems to be a better chance of recovering for pure economic loss than under UK law; a prominent case in Ontario recently included an award for "stigma" damage. As in the UK, punitive damages are only available in rare circumstances and personal injury actions normally have to be pursued under fault-based liability in negligence, although some observers detect an increasingly onerous interpretation in the courts of the defendant's duty of care.

Despite the relatively severe clean-up liability rules at provincial level, reinstatement of damage to biodiversity elements like species and habitats has not generally been included in such statutes, nor is there a common law cause of action for private parties or individuals in this area. In principle, however, both the Environmental Protection Actions allowed under CEPA (see above) and the Right to Sue section of the Ontario Bill of Rights allow private citizens bring legal actions to prevent or halt unlawful actions which could cause significant harm to an ecosystem. There are also signs that criminal penalties are taking account of the cost of ecosystem restoration, and there is speculation that the forthcoming Species at Risk Act may lead to wider remedies, although a citizen enforcement provision in early drafts of that law has since been deleted.

AUSTRALIA

As in Canada, environmental liability in Australia is mostly a matter of state, rather than federal, law. Nevertheless, some potential liabilities and response obligations arise under Commonwealth (ie, federal) laws, such as the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the recently adopted Gene Technology Act 2000 and the recently amended Protection of the Sea (Civil Liability) Act 1981.

The EPBC Act regulates a wide range of activities which could have a significant impact on matters of national environmental significance (NES), such as Ramsar wetlands, nationally threatened species and ecosystems, internationally protected migratory species and World Heritage sites. Assessment and approval of such activities have to take account of the principle of ecologically sustainable development (ESD) and the Act incorporates several

elements of public participation and involvement of indigenous peoples. Its enforcement provisions include powers to order parties to conduct environmental audits where contraventions are suspected, civil (ie, administrative) and criminal penalties against corporate directors and officers, and an obligation to pay for remediation of any resulting environmental damage.

The Gene Technology Act, which was approved on 21 December 2000, allows the new Gene Technology Regulator (GTR) either to order GMO operators to take preventive or remedial action, or to recover the costs of such action, in the event of a breach of a licence condition or an imminent risk of danger to health or the environment. Both the GTR and any other person are also entitled to seek an injunction to prevent action which would contravene the Act. The legislation does not, however, include strict liability for personal injury or property damage to Third Parties, despite discussion of that possibility during its preparation. Private parties must still pursue such matters through common law actions in nuisance, trespass or negligence.

The Protection of the Sea (Civil Liability) Act 1981 provides for recovery of clean-up costs and other losses due to marine oil spills, under the terms of the IMO conventions. An amendment to this Act, approved in October 2000, strengthened the regime by imposing a requirement that all ships of 400 or more gross tons entering or leaving an Australian port must carry insurance to cover clean-up costs resulting from spillage of bunker oil or other oil, and by clarifying both shipowner liability and the ability of the Australian Maritime Safety Authority (AMSA) to recover costs where there is a threat of, but no actual, discharge from a ship.

In addition to these statutes, the National Environment Protection Council Act 1994 (NEPC Act), laid the basis for a system of National Environment Protection Measures (NEPMs), setting standards or guidelines for various aspects of environment policy. These are not binding, but depend on the co-operation of the states to implement them under state laws and regulations. The first of these, made in February 1998, set up a National Pollutant Inventory (NPI) designed, as in other countries, to make emissions data freely available to the public, as a means of enhancing pressure for compliance enforcement and waste reduction. Others on ambient air quality, inter-state waste movements and packaging materials followed, but the most pertinent one as far liability is concerned, is the NEPM on assessment of site contamination, adopted in December 1999. This sets guidelines for factors such as investigation levels, data collection, sampling, analysis, health and ecological risk assessment, and community consultation and risk communication. One aspect of potential significance for clean-up liabilities that observers have noted is that the public consultation and risk communication guideline recommends that communities are informed of possible risks even before a site has been investigated and the risks assessed.

As far as contaminated sites are concerned, the liability rules and remedial procedures are under state law. The regime in New South Wales (NSW) – Australia's largest state in terms of population and economic activity – is widely seen as a leader in this field. Proposals recently announced in Western Australia, one of the last states to enact legislation on this issue, serve as a comparison.

The main law on this subject in NSW is the Contaminated Land Management Act 1997 (CLM Act). This is primarily a public law statute, with civil law elements, establishing a range of functions and powers for the state Environment Protection Authority (EPA). The

scope is very broad, with "environment" defined to include all the environmental media, atmospheric layers, organic and inorganic matter, living organisms, human-made or modified structures or areas, and ecosystems that include such components. "Contamination" is defined in terms of the presence in, on or under land of a substance at a level above its normal concentration in such land, where that presence presents a risk of harm to health or the environment. The EPA is given a duty to investigate actual or possible contamination, address any significant risk that it presents and record what has been done. The EPA is also required to have a general regard to the principles of ecologically sustainable development, which is defined in relation to the precautionary principle, inter-generational equity, conservation of biodiversity and ecological integrity, and internalisation of environmental costs .

Section 60 of the Act obliges causers of contamination and site owners to notify the EPA of contamination which presents a significant risk of harm as soon as practicable after they become aware of it, with penalties for failure to do so of up to A$137,500 (euro 76,370), for corporations, and A$66,000 (euro 36,660), for individuals. Any other person is also entitled to report contamination if they think it poses a significant risk.

Significant risk is determined by several factors, including targets, pathways, land uses, toxicity and concentrations, etc. If the EPA decides that a site does pose a significant risk of harm, it has several choices of action; it can: declare a site to be an "investigation area" or a "remediation site"; issue an investigation or remediation order; accept proposals for voluntary action; liaise and negotiate with owners and occupiers on appropriate solutions; or undertake action with the local community to minimise the risk through education and public awareness. In order to assist voluntary remediation, the Act establishes a system of accreditation for independent site auditors, who are entitled to issue site audit statements confirming completion of the required action, as well as having a wider role in assisting processes such as urban planning and development.

If either investigation or remediation is to be done, there is a hierarchy of "appropriate persons" who can be ordered to do it:

(a) a person who had principal responsibility for the contamination; or, if that is not practicable,
(b) an owner of the land (whether or not they were responsible for the contamination); or, if that is not practicable,
(c) a notional owner of the land

The concept of "notional owner" includes a mortgagee in possession or various other parties who have a vested interest in the land, but excludes anyone who simply holds a security interest or who, having exercised such an interest, has entered into a contract to sell the land. The liability of legal personal representatives and trustees is also limited to their lawful drawings from the relevant estate or property.

The practicability of finding one of these classes of responsible party is determined in relation both to the possibility of identifying and locating the person, and to their financial ability to pay for the required response action. The liability therefore passes to an owner if no identifiable or solvent party with "principal responsibility" – effectively, a causer or permitter of the harm – can be found, and may pass on to a notional owner on the same conditions in relation to site owners. The law is unspecific about "principal responsibility"

and contains no distinction between current and previous owners. Where a public authority has to carry out the investigation or remediation itself, it can recover, from any of the appropriate persons, any costs reasonably incurred. The authorities may place a charge on the land or, if an owner is insolvent, recover their costs in priority to all other holders of security over the land. Where a private party who had no responsibility for the contamination, including an owner or a notional owner, has carried out an investigation or remediation, the Act provides for cost recovery against anyone who had responsibility for the contamination. Such private cost recovery is subject to certain pre-conditions in cases of voluntary remediation (reasonable steps to notify responsible parties in advance and to involve them in the remediation plan).

The liability is strict, and joint and several (within each class of appropriate person), and applies irrespective of when either the contamination, the risk or the causative events occurred[9]. Liability applies even if the contamination or risk arises because of interaction with a substance previously left at the site by someone else or because of a change in the approved use of the land brought about by the liable person. No defences are specified, except for the protections given to secured creditors, representatives and trustees (see above), and non-fulfilment of the requirements of the Act (eg, significant risk of harm or membership of a class of appropriate person). In the case of parties classified as having principal responsibility for the contamination, the EPA has the burden of proving that responsibility.

There is a right of appeal against an order to the NSW Land and Environment Court (the specialist environmental court set up in 1979). The same court is also empowered, however, to extend the liability to directors and officers of a corporate body, at their own expense, if that body has been wound up or has sold the land, within the previous 2 years, or has simply failed to carry out an order.

There are severe penalties for non-compliance: up to A$137,500 (euro 76,370) or, for a continuing offence, A$66,000 (euro 36,660) per day, for a corporation, and A$66,000, or A$33,000 (euro 18,330) per day, for an individual.

Proposals for a contaminated land regime in Western Australia (WA) – the largest state by land area, but only fourth largest by population (1.8 million in 1998) – were published in June 2000, as the Contaminated Sites Bill 2000. The idea of legislation on this issue has been in debate since the early 1990s. In the interim, the state authorities have been reviewing the regimes elsewhere and have come under public pressure to introduce legislation following a number of well-publicised pollution incidents, such as an arsenic spill in Cockburn Sound in 1999. In the absence of a statutory regime, several polluted sites have been cleaned up using public money – the WA government says that it has spent some A$30 million (euro 16.7 million) on this since 1993.

In some respects the proposed regime is less severe than the one in NSW – it offers landowners a chance to escape liability, for example – but there are also many similarities

[9] Clause 2 of Schedule 2 of the Act, entitled "Pre-existing" contamination, leaves no doubt about this: "Nothing in this Act prevents the application of a provision of this Act to contaminated land just because: (a) the land was contaminated before the commencement of the provision, or (b) the risk presented by the contamination was present before that commencement, or (c) an act or activity referred to in section 13 took place before that commencement or an existing use referred to in that section arose before that commencement." (Section 13 concerns responsibility if the contamination is indirect or delayed or the risk arises because of a change of use.)

and the penalties for non-compliance are higher in WA. "Contamination" is defined to include land or groundwater where a substance is present "at a concentration that presents, or has the potential to present, a risk of harm to human health or any environmental value". The regime requires owners, occupiers, causers of contamination (anyone "who has caused, or suspects that he or she has caused, or contributed to, the contamination"), public officers and (environmental) auditors to report to the authorities sites known or suspected to be contaminated, subject to a fine for non-compliance of up to A$150,000 (euro 83,315), or A$50,000 (euro 27,772) per day, for corporations, and up to A$125,000 (euro 69,429), or A$25,000 (euro 13,886) per day, for individuals. Once reported, the Department of Environmental Protection (DEP) classifies a site, on the basis of the national site contamination assessment guidelines (ASC NEPM, see above), into one of six categories: report not substantiated; possibly contaminated – investigation required; not contaminated – unrestricted use; contaminated – restricted use; contaminated – remediation required; or decontaminated. Information from this is filed on a database, subject to appeal.

Where remediation is required, the regime is intended to encourage voluntary, independent remedial action, but the DEP has the option of issuing three kinds of administrative order: an investigation notice, a clean-up notice or a hazard abatement notice – the last being for serious risks which require immediate action. The liability is assigned, first, to the person who caused, or contributed to, the contamination, or second, if that person can not be identified or found, or is insolvent, to the owner of the land.

As far as the first is concerned, the liability is strict if the cause or contribution is after the law comes into force, but is fault-based for earlier actions (requiring an "unlawful act"). However, earlier actions are presumed to be unlawful, unless the person can prove otherwise. Owners, on the other hand, are strictly liable for all contamination, regardless of when it arose, unless they make a formal disclosure statement, identifying any contamination on their land, within two years of the law's entry into force. On receiving such a disclosure, the DEP must grant an exemption certificate, provided it is satisfied that the owner meets a relatively onerous innocent ownership test[10].

The regime allows liability to be transferred by any liable party, with the agreement of the other party and approval from the authorities. Such transfers are conditional upon the person accepting the liability having sufficient financial assets to carry out the required remediation and they can be annulled if that turns out not to be the case. Owners may also sell the land or an interest in it, subject to full disclosure of its condition and approval by the DEP, and by so doing transfer their liability to the new owner. The definition of an owner includes a mortgagee in possession, but such mortgagees can transfer the liability to the state, if they so request within 45 days, subject to the state taking possession of all or part of the land, or placing a charge upon it. In the case of insolvent corporations, the DEP is entitled to extend the liability to directors of the company immediately before insolvency and to any other corporate body which was related to the company at that time.

Aside from the conditions described above, the only defences specified in the Bill are: that the contamination was a direct and unavoidable result of a direction given, or an action carried out, by a public authority; and that the land had previously been given a certificate of

[10] The DEP must be satisfied that the owner neither caused, nor contributed to, nor failed to prevent the contamination, that the land was contaminated at the time of acquisition and that he neither knew nor suspected, nor could reasonably have known or suspected, that it was in that condition.

contamination audit (ie, a clean bill of health) which failed to identify the presence of contamination. The regime includes a scheme for accreditation of independent auditors for the purposes of assessing and approving remedial work. Appeals are allowed against the conditions of a notice, although not the serving of the notice itself. They are addressed to the Minister for Environment. Non-compliance with numerous elements of the regime is an offence, with a range of penalties, including fines of up to A$500,000 (euro 280,000), or A$100,000 (euro 55,550) per day, for both corporations and individuals.

On the traditional damage side, civil law actions for personal injury and property damage remain subject to common law rules in Australia. There are some differences in the lines of precedent between the states, but the system as a whole owes much to the common law in the UK (England & Wales). Some important differences exist, notably in a landmark ruling in the Australian High Court in March 1994, *Burnie Port Authority v. General Jones Pty Ltd* (179 CLR 520 (1994)), in which the court reached a pointedly different conclusion from the UK House of Lords judgment in the *Cambridge Water Co.* case (see entry on the UK), on the merits of the strict liability rule in *Rylands v. Fletcher*. The Australian court argued that the rule in *Rylands v. Fletcher* had effectively been absorbed by the principles of ordinary negligence which, in certain cases involving use of dangerous substances or dangerous activities by an occupier or user of land, now extended to an enhanced and onerous standard of precaution, known as a non-delegable duty of care[11].

It is not yet clear how far this will influence environmental cases, but it can be seen as symptomatic of a trend, as in other jurisdictions, towards more stringent precautionary duties on landowners and operators under negligence. Nevertheless, personal injury claims in Australia generally have to be pursued under the fault-based liability rules of negligence and, as elsewhere, such cases are relatively rare, although that seems to be more a result of the difficulty of proving causation than the obstacle of proving fault. Property damage cases are more often pursued as nuisance claims, with a trend towards almost automatic liability where the harm was foreseeable.

Private citizens do not having standing under Australian common law to bring legal actions for damage to biodiversity in the form of habitats, species and ecosystems. There is considerable concern about such damage but, up to now, it is dealt with under public law, with private rights of action built into certain statutes and the severity of such damage included as a factor in assessing penal sanctions. It also appears that the open-ended definitions of the environment in state clean-up laws will allow liable parties to be directed to reinstate ecosystems as well as removing contaminants from a site.

JAPAN

Japan has followed a different path from most OECD countries in the development of its environmental liability rules and clean-up obligations. The result is almost a mirror image of the typical position in Europe and North America: broad interpretation of liability for

[11] This is more stringent than a general duty of care, inasmuch as the duty is not merely to take reasonable care, but to ensure that reasonable care is taken. The UK court had argued in *Cambridge Water Co.* that the rule in *Rylands v. Fletcher* was a special case of liability in nuisance.

personal injury, with relatively little strict liability for contaminated sites or other environmental damage.

A substantial part of the current position has emerged out of highly publicised mass pollution cases and a series of civil law actions brought by private plaintiffs against both companies and government bodies. The civil law actions have resulted in some of the most expansive liability rulings in the world for pollution-related personal injury, including a willingness to assign liability for what is seen elsewhere as diffuse pollution and a relatively broad approach to apportionment between multiple party defendants. In that context, in the early 1970s, the Japanese government instituted tight regulatory controls on certain emissions and strict liability rules for health damage caused by air and water pollution, together with a collective compensation system, ahead of many other industrialised countries.

In some respects the regulatory system was very successful; the controls on certain air pollutants, in particular, achieved substantial reductions in emissions during the 1970s and 1980s, despite rapid economic growth. On the other hand, Japan still lacks binding national clean-up rules for contaminated land, it has a major problem of air emissions from waste incineration plant and of unregulated waste disposal in general, access to justice is relatively narrow and both amounts of compensation and criminal penalties, are low compared with their equivalents in Europe or North America.

An important feature of the Japanese approach to pollution and environmental damage is the widespread use of non-binding instruments; in particular, voluntary agreements with industry and administrative guidance from statutory bodies. This is part of a general tradition in Japan, where official exhortations carry considerable weight, voluntary initiatives are expected to follow and there is much less reliance on legal remedies. In the environmental field, companies are expected to enter into pollution prevention agreements and to act on official guidance despite of its informal status. This approach has the merit of avoiding some of the legal costs incurred in other countries, but makes it difficult for other parties to challenge any failures in the associated action, because no legal duty has been breached. In principle, challenges to administrative guidance measures are possible under the Administrative Case Litigation Law, but standing to bring a lawsuit under that is limited. As a result, much of the litigation against public bodies concerning pollution failures has been brought instead under the National Compensation Law, which requires proof of negligence or wilful misconduct and allows the courts to set aside relief if it is deemed to be against the public interest.

Since the passage of new framework legislation in 1993, in the form of the Basic Environment Law, there have been signs of this position changing, with statutory obligations beginning to play a greater role. New environmental quality standards for groundwater and soil have been set, although the latter are not backed by a clean-up obligation. Amendments to the water and waste laws in 1997 have brought strict liability for damage to groundwater, more severe penalties and both remediation powers and a joint compensation fund for improper waste disposal. Strict liability obligations have also been emerging over a longer period under prefectural and municipal statutes in certain areas, for remediation of certain types of harm. In addition, there have been are signs in recent years of growing market pressures for correction of contamination and pollution problems before corporate transactions can take place.

Much of this system can be traced back to the detection in the 1950s of two severe forms of pollution-related injury: Minamata disease and itai-itai disease. Minamata disease is a disorder of the central nervous system caused by ingestion of methyl mercury, through contaminated seafood. It first appeared in the mid-1950s around Minamata Bay, in Kumamoto Prefecture on the southern island of Kyushu. It then reappeared in the mid-1960s, several hundred kilometres to the north, in the Agano River basin, in Niigata Prefecture on the main island of Honshu. Itai-itai disease, a severe disability caused by cadmium poisoning, was first detected in the Jinzu River Basin, in Toyama Prefecture, in 1955. All three cases involved hundreds of people reporting injuries which appeared to be related to local industrial activities.

After several years of dispute about causation, civil lawsuits were launched in these cases at the end of the 1960s, together with another suit addressing a separate problem involving large numbers of asthma cases in Yokkaichi City, in Mie Prefecture. The proceedings that followed are widely known as the Big Four pollution trials[12]. The suits were brought by multiple plaintiffs between 1967 and 1969, and resolved between 1971 and 1973, with the courts ruling in favour of the plaintiffs in all four cases. The judgments in these cases set new precedents on several important issues, including: the acceptability of epidemiological evidence; a broadening of the traditional apportionment rules to draw in defendants who had contributed to the aggregate pollution load but were not directly linked to particular plaintiffs' injuries; and methods of calculating compensation without detailed assessment of a plaintiff's injuries. Those precedents continue to influence personal injury rulings today.

In the meantime, the Japanese government had passed a first framework law to handle these problems, the Basic Law for Environmental Pollution Control 1967, and had set up a public inquiry into the Minamata and itai-itai cases, which reported in 1968. That recognised both as environmental pollution diseases and, in the Kumamoto and itai-itai cases, attributed the cause to the neighbouring industrial plants – in the Niigata case, it decided only that industrial emissions were a contributory factor.

In 1970, a special session of the Japanese Parliament, often referred to as the Pollution Diet, approved or amended 14 environmental laws, partly in response to public concern about these cases. Three of those laws – the Water Pollution Control Act, the Air Pollution Control Act and the Waste Disposal and Public Cleansing Act – continue to provide the main framework for national liability and clean-up obligations today. In 1972, strict liability provisions for health damage resulting from emissions were added to the water and air laws, among others.

In 1973, the Pollution-Related Health Damage Compensation Law was passed (effective from September 1974), replacing an emergency law, the Pollution Victim Assistance Law 1969, which had been passed before the Big Four cases were resolved. The new law set up a joint compensation system, funded by the responsible parties, for two categories of disease: Class 1, "non-pollutant specific" diseases, such as asthma; and Class 2, "pollutant-specific" diseases, such as Minamata and itai-itai, which carry clear signatures as to their cause. Under the system, geographical areas are designated as Class 1 or Class 2 areas, based on their proximity to sources of relevant emissions. Applicants are then assessed and certified

[12] *Watanabe et al. v. Chisso* (Kumamoto District Court, 9 August 1972, 696 Hanji 15), *Ono et al. v. Shona Denko* (Niigata District Court, 29 September 1971, 22 Kakyu Minshu (Nos 9-10)), *Aoyama et al. v. Mitsui Kinzoku* (Nagoya High Court, 9 August 1972, 674 Hanji 25) and *Shiono et al. v. Showa Yokkaichi Sekiyu* (Tsu District Court, 24 July 1972, 672 Hanji 30).

by the prefectural governor, in consultation with a Health Damage Certification Council composed of medical, legal and other experts. Those certified as victims are entitled to compensation for medical care, rehabilitation and disability payments up to 80% of their previous average monthly wage. Where victims have died, their dependants are entitled to survivors' benefits and funeral expenses. There are no payments for property damage, pain and suffering, or other types of damages.

The system is funded by levies paid by plants which emit the offending pollutants. In the case of Class 1 areas, 80% of the money comes from stationary producers of sulphur dioxide emissions – 90% from plants within the relevant area, 10% from ones outside it – the other 20%, from mobile sources of nitrous oxides, by means of a tonnage tax on motor vehicle manufacturers. In Class 2 areas, all the compensation is funded by generators of pollutants within the specified area; they also pay half the rehabilitation and administration costs, the other half being met by local and central government. Class 1 funds are collected nationally and dispersed locally, whereas with Class 2 funds both operations are local.

This system was intended to provide an efficient alternative to litigation, relieving victims of the need to prove causation in any detailed sense. To some extent, it has succeeded in doing that, but it did not bring an end to the litigation and it was itself subject to frequent pressure for changes in the rules. In July 1977, the qualification requirements, in terms of medical symptoms, for certification as a Minamata victim were tightened and, the following year, statutory emission limits for nitrous oxide were relaxed after complaints from industry about their feasibility. During the 1980s, industry groups and others complained that the numbers of applicants for Class 1 compensation was still rising despite the fact that air pollution regulations had sharply reduced the ambient concentrations of the causative pollutants. In 1988, the government decided to stop accepting new claims for Class 1 payments. These and other events around the compensation system – certification refusals, etc – resulted in new lawsuits brought by people dissatisfied with the remedies it offered.

Mass legal actions involving pollution-related personal injury claims have consequently continued to the present day. Some have concerned unresolved claims for Class 2 diseases, but potentially the more significant ones have, like the Yokkaichi case, concerned respiratory illnesses allegedly caused by air pollution. In several different cities, civil suits have been brought, since the late 1970s, by hundreds of plaintiffs against industrial companies, highway authorities and the central government, alleging that serious health damage has been caused by a combination of industrial and motor vehicle emissions in urban areas where homes are close to such sources. In addition to compensatory damages running into billions of Yen, these actions have sought injunctive relief from further pollution, through measures such as tighter air quality standards and closure of certain roads when trigger levels of pollutants are reached.

Not all the claims have been upheld, but the courts have ruled in favour of the plaintiffs on many counts, awarding substantial damages to some of the claimants, ordering the government and highway authorities to restrict road traffic in certain circumstances and recognising that defendants were at fault. One court ruling in 2000 concluded that heavy traffic "is not simply a nuisance to people's daily lives, but it is also illegal to a considerable degree". In that case, brought by victims in Amagasaki, near Osaka, ¥330 million (euro 3 million) was awarded to 50 (out of an original group of 379) plaintiffs, against the Hanshin Expressway Public Corporation and the government, to add to ¥2.42 billion (euro 22 million) which had been obtained in 1999 in a voluntary settlement with nine companies also

cited in the action (for industrial emissions in the same area). This judgment, like others in Kawasaki and the Nishi Yodogawa district of Osaka (where the private parties settled for ¥4 billion (euro 36.5 million)), acknowledged both a causal relationship between vehicle emissions and health damage, and a failure by the public authorities to take preventive measures when they could have foreseen the harm. The main complaints were of bronchial asthma or bronchitis, and the court gave substantial weight to evidence that the highest incidence of such ailments was found nearest to the highways. The defendants had argued that there were other sources of air pollution than vehicles, that Amagasaki's pollution levels were lower than in other areas, that there was no evidence of a causal link between air pollution and health effects, and that the relevant emissions were released by vehicle users rather than the government or public corporations, but the court did not accept these arguments.

A similar judgment was reached in the latest ruling, in December 2000, concerning a claim brought by 300 residents in Nagoya, and there are more cases still to come. Despite differences between them, these judgments suggest a number of general principles for Japanese civil law in this field, including:

- the courts are prepared to assign liability to individual companies for damage arising from air emissions from numerous sources in a localised area;
- multiple defendants can be held jointly and severally liable for harm caused by air emissions on the basis of their individual releases mixing once in the atmosphere;
- where certain emissions are known to be capable of causing or exacerbating health conditions, there may be a presumption of causation if they are present in high enough concentrations within the relevant area;
- the existence of other possible contributory factors to the harm may not be sufficient to protect the parties emitting the pollutants from liability;
- compliance with statutory permits or guidelines is not a defence;
- evidence of raised incidence of health disorders can be sufficient to show actionable harm; and
- highway authorities and other government bodies may be held responsible for damage caused by road traffic emissions on the grounds that their actions encouraged or authorised a level of emissions that was sufficient to cause harm.

As far as statutory rules are concerned, there is no national law governing liability and clean-up of contaminated land. Environmental quality standards (EQSs) for soil pollution were issued in August 1991, and supplemented in February 1994, to bring the number of substances and compounds covered to 25. In November 1994, the Environment Agency issued Guidelines for Investigation and Countermeasures for Soil and Groundwater Pollution. These include trigger levels for investigation and either containment or remedial action. There is no statutory requirement to implement them, but administrative guidance is issued from time to time where pollution is identified, urging owners or occupiers to clean up sites voluntarily in accordance with the guidelines. There are also numerous voluntary agreements with industry groups and companies, which include pollution prevention and remedial actions in various circumstances.

If there is evidence of groundwater contamination, or a risk of such damage, the Water Pollution Control Act has, since 1997, contained provisions allowing prefectural or municipal authorities to order preventive or remedial measures by owners or occupiers. These rules were strengthened in amendments to the law passed in June 1996 following

investigations in 1994 into the extent of groundwater contamination in Japan, which showed that it existed in 1,151 areas, affecting nearly 560 municipalities, with 80% of these cases involving pollution by organo-chlorine solvents (TCE and PCE). Groundwater EQSs were set for 26 substances or compounds, including these organo-chlorines, with more due to be added. Facilities which may be subject to clean-up orders include: those designated as a source of the contamination, as a result of an official investigation; those adjacent to the area where contaminated groundwater is discovered; and those currently using, or which had previously used, organic solvents. Several hundred orders have reportedly been issued since this power was established. Where ownership of the land or facilities is transferred, the liability normally stays with the original polluters, unless the new owner qualifies under one of the categories – although as owners they may be subject to remedial obligations or urged to take voluntary action, under other national or local rules.

As far as liability for personal injury is concerned, the Water Pollution Control Act contains the strict liability rules inserted in 1972 (see above). These hold the responsible enterprise liable for health damage caused by emissions, but allow the courts to take account of *force majeure* when determining the extent of liability or the compensation sum, and also of minor contributor status, when considering the sum. There are also limitation periods of three years from discovery and twenty years from the occurrence of the damage[13].

At regional level, a number of prefectural or municipal authorities have passed their own ordinances which require investigation and clean-up when contamination is discovered. Hadano City and Kanagawa Prefecture, just south of Tokyo, have been prominent is this field, but various other authorities, including Nagano City, Kumamoto Prefecture, Tokyo Metropolis, Yokohama City, Kitakyushu City and Kawasaki City, have provisions of one kind or another, some more binding than others.

Under amendments made in 1995, and effective in 1997, the national Waste Disposal and Public Cleansing Law also contains clean-up order powers and a new funding mechanism to pay for orphan sites, where contamination has been caused by unlawful waste disposal after June 1997. The fund will be financed by industry and government and operated by the Centre for Promotion of Proper Disposal of Industrial Waste. The maximum penalties for non-compliance under this law were also raised from ¥1 million (euro 9,000) to ¥100 million (euro 0.9 million) for corporate bodies and ¥10 million (euro 90,000) for individuals. A further statute, the Law for Special Measures for Dioxins Control, enacted in July 1999, contains some powers for remedial action to deal with contaminated soil.

Underlying these rules, the Basic Environmental Law of 1993 establishes some general principles and responsibilities, which have the potential to inform judicial rulings on liability. Basic principles include various notions of environmental conservation to ensure sustainable development and include recognition that the environment "is maintained by a delicate balance of the ecosystem". Environmental pollution is defined to include "interference with environmental conservation", air and water pollution, soil contamination, noise, vibration, etc, and other activities which cause damage to human health or the living environment, including flora and fauna. Art.8, on Responsibility of the Corporations, makes corporations responsible for: taking necessary measures to prevent environmental pollution resulting from their activities and to properly conserve the natural environment; ensuring proper disposal of wastes, so as to prevent interference with environmental conservation;

[13] The official translation speaks of "twenty years….from the time when the damage occurred" (Art.20-3), but it is unclear whether this means the causative releases, the injury in fact or some other point in the process.

making efforts to reduce the environmental burdens resulting from the use or disposal of the products and other goods related to their activities; and making voluntary efforts to conserve the environment and co-operating with the policies implemented by national or local governments. Art.37, on Cost Bearing by Causers, also emphasises that the costs of any official interventions that are needed to prevent or remedy pollution should be borne by "persons who have caused the circumstance necessitating the project".

SWITZERLAND

Although Switzerland has a strongly federal constitution, the majority of environmental liability and clean-up rules are under federal law. The two most important statutes as far as liability is concerned are the Environmental Protection Act 1983 (USG), as amended in 1995, and the Water Protection Act 1991 (GSchG), as amended in 1997, together with various ordinances based on those laws. The private law rules are also mostly federal, deriving from the Civil Code (ZGB) and Code of Obligations (OR), which contain a mixture of strict and fault-based liability. The amendments to the USG in 1995 (effective from 1 July 1997) added a new strict civil liability for high-risk installations.

The main area of liability for environmental damage is contaminated sites. The regime for this is set out in the revised USG and three ordinances: the Ordinance of 1 July 1998 on damage to the soil (VBBO), the Ordinance of 26 August 1998 on the remediation of contaminated sites (AltlV) and the Ordinance of 5 April 2000 on the contaminated site remediation tax (VASA). Since the mid-1980s, when there was a major incident at a hazardous waste landfill at Kölliken, the cantonal authorities have been addressing the problem of contaminated sites in their areas. They looked initially at landfills and accident sites, then expanded this to include active industrial sites. A co-ordinated federal policy has been emerging since the early 1990s, with a key strategic policy document on contaminated site management published in 1994.

The 1995 amendments to the USG established a detailed system for registering, assessing and remediating sites, with the aim of prioritising those that present the highest risks. The Act obliges the cantonal authorities to compile a public register of polluted sites and to remediate those that are deemed contaminated. The Swiss Agency for Environment, Forests and Landscape (BUWAL) has estimated that about 50,000 polluted sites will appear on the register, with around 3,000 sites expected to need remediation, at an estimated cost of about SFr 5 billion (euro 3.3 billion) over the coming 25-30 years. Initial returns from the cantons showed that industrial sites made up 50% of the total, landfills, 45%, and accident sites, the remaining 5%. Over 80% of the cases needing remediation are thought to be relatively minor sites, costing less than SFr 1 million (euro 0.65 million) to clean up, while, at the other extreme, about 10 sites are expected to cost more than SFr 50 million (euro 32.7 million).

The USG as a whole is a framework law combining regulatory, remedial and other functions, including provisions on air pollution, waste management, dangerous substances and organisms, site clean-up, civil liability and various taxes. It is premised upon protection of humans, animals, plants and the environment, and upon the polluter pays principle. It

contains broad definitions of harm (air pollution, noise, vibration, rays, water pollution and other damage to water, soil pollution, etc) and of soil pollution (physical, chemical or biological changes to the natural state of the soil). It imposes a duty on operators of high-risk plants to take appropriate measures to protect the public and the environment, and a wider duty to remedy any conditions that fail to meet the standards prescribed in this or any other federal environmental laws. Where such breaches occur, the authorities tell the operator what has to be done and he, in turn, has to submit a remediation plan. There are powers to order urgent preventive measures or even plant closure in urgent cases. Art.26 forbids the introduction of, and obliges manufacturers or importers to prevent, any substances which themselves, or their derivatives or wastes, could, even if used in conformity with official requirements, pose a threat to the environment or humans. Arts 29a and 29b set similar requirements for users of genetic organisms. The section on waste (Chapter 4) includes, in addition to the usual principles of minimisation, reuse and safe disposal, powers for the federal government to: forbid the introduction of short-life products (if their benefits do not justify the environmental harm which they bring); forbid the use of substances or organisms whose disposal causes substantial difficulties or could pose a threat to the environment; and oblige manufacturers to avoid the creation of wastes for which there is no known safe method of disposal. It also includes a compulsory financial security requirement for operators of waste disposal sites. Art.32b requires that they provide a guarantee, in the form of insurance or other means, sufficient to cover all costs of closure, post-closure care and remediation.

The main administrative liability regime appears in this chapter, under Section 4 (Remediation of waste disposal sites and other sites polluted by wastes). This starts with a duty on the cantonal authorities: first, to ensure that any such sites which either cause, or could cause, harmful or objectionable effects are cleaned up; and second, to create a public register of waste sites and other polluted sites. Art.32d assigns liability for the remedial costs to the polluter, which includes both parties whose behaviour (actions or omissions) has caused the harm and those who are responsible as holders (owners or occupiers) of the offending site. The liability is strict, but not joint and several. In multiple party cases, liability is to be divided in proportion to each party's share of responsibility. In addition, the first in line for liability is the person whose behaviour has made the clean-up necessary. Those who are liable solely as site holders may be exempted on three conditions:

- they could not have known of the presence of the pollution, even with the exercise of due diligence;
- they have received no benefit from the pollution; and
- they will receive no benefit from its remediation.

The authorities are also empowered to make a ruling on apportionment if the party carrying out the remediation so requests or if the authorities do the remedial work themselves.

There is provision for a tax or levy on both waste disposal operators and waste producers, to finance a fund to indemnify the cantonal authorities for up to 40% of the costs of remediation at orphan sites and some other sites. The levy can be up to 20% of the average price of waste disposal and is expected to yield an annual budget for the fund of around euro 17-20 million. That has since been implemented under the Ordinance of 5 April 2000 (VASA).

The procedure for identifying, investigating and, where necessary, cleaning up sites is set out in the Ordinance of 26 August 1998 (AltlV). This distinguishes between "polluted sites", where some damage has occurred but clean-up is not immediately necessary, and "contaminated sites", where remediation is needed. It provides for restrictions on construction work and other alterations at polluted sites. Criteria are set out for determining the need for, and urgency of, remediation, in terms of protecting ground- and surface waters, air and soil. Where a site is declared contaminated, the basic remedial objective is complete elimination of the harm, or threat of harm, which underlies the remedial action. That has to be balanced, however, against other criteria such as feasibility, sustainability and cost. All kinds of remedial measures are allowed (removal, containment, use restrictions, etc) and detailed decisions about the appropriate action are based on the usual factors (effect on the environment, long-term effectiveness, the dangers posed by the site, the possibility of controlling any residual contamination and effectiveness in achieving the remedial objectives). The primary responsibility for carrying out investigation, surveillance or clean-up work, under the Ordinance lies with the site owner (holder) (Art.20(1)). The authorities may, however, order other parties to do the investigatory and surveillance work if they have reason to believe that they caused the damage, or even to plan and conduct the remediation, provided the current site owner agrees.

Underlying the whole system, there is a presumption in favour of voluntary agreements. This is common to most Swiss environmental law. Art.23 of the Ordinance (AltlV) instructs the authorities to collaborate with the interested parties and to explore the possibility of getting the work done under general agreements that have been reached with certain economic sectors.

The USG gives environmental organisations legal standing in administrative proceedings, at both federal and cantonal level, provided they meet three conditions: they are national organisations, they have protection of the environment as their objective and they have been in existence for at least 10 years. Such organisations are to be placed on a list published by the federal government.

In addition to the administrative aspects of the regime, the Act also enshrines strict civil liability for high-risk enterprises and installations (Art.59a). This does not, however, cover damage to the environment itself. An indicative list of types of activity that are subject to this regime is included: those regulated under Art.10 of the Act because of the substances, organisms or wastes that they handle; waste disposal operations; those that use liquids which could harm water sources; those handling substances or organisms whose use is subject to federal authorisation or other federal requirements. The liability falls on the owner of the enterprise or installation. Defences are available in terms of *force majeure*, or gross negligence/exclusive fault of the victim or of a Third Party. Certain articles of the Code of Obligations apply and a reserve is put on the civil liability rules in other federal laws. There is also confirmation that the federal, cantonal and communal authorities are equally subject to this regime. The Act empowers the federal government to require certain operators to provide guarantees to cover their liability risks under this regime.

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