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ARTICLE

Retroactive Liability in China's Soil Pollution Law: Lessons from Theoretical and Comparative Analysis

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Abstract
Whether companies and shareholders should be held liable for land contamination that occurred prior to the passage of the law imposing liability for such contamination is a complex issue. After a theoretical analysis of the legitimacy of retroactivity in land contamination law, our comparative study shows that most countries have adopted, or tacitly approve of, retroactive liability for land contamination. However, the liability schemes implemented in the countries investigated vary as to the types of obligation, the timing of conduct for which liability is imposed, and the standard of liability, among other factors. The retroactive imposition of liability in China's recently enacted Law on the Prevention and Control of Soil Pollution is examined, as well as the roadblocks that still remain, and further improvement based on the theoretical and comparative analysis are considered.

Keywords: Land/soil contamination, Retroactive liability, Comparative study, Chinese Law on the Prevention and Control of Soil Pollution, China, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

1. INTRODUCTION

Over the last three decades several countries and regions have formalized liability schemes to allocate the costs of remediating soil contamination. Many of these liability schemes include provisions that apply land contamination laws retroactively – i.e., they hold persons liable for actions that took place prior to the enactment of applicable land contamination laws. However, this retroactive application of such laws is contentious because remediation is often extremely burdensome, especially given that potentially

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responsible persons may have complied with all existing laws and regulations in force at the time. Retroactive liability has faced continual challenges since the commencement of the United States (US) Comprehensive Environmental Response, Compensation, and Liability Act (1980) (CERCLA),[1] which aimed to combat pre-existing soil pollution by imposing liability retroactively for land contamination.[2]

Few countries have adopted exactly the same system for imposing retroactive liability.[3] The imposition of retroactive liability for land contamination has been largely resolved in many jurisdictions that have passed specific legislation on land contamination, including the Netherlands and the Canadian province of Alberta. However, the issue remains unaddressed in jurisdictions without comprehensive land contamination laws. China's newly passed Law on the Prevention and Control of Soil Pollution, effective from 1 January 2019, provides an ideal opportunity to examine the imposition of retroactive liability for land contamination, to discuss issues that remain after the enactment of the new law, and to explore the implications for China in light of the theoretical and comparative analysis offered in this article.

To that end, following this introduction, the article proceeds in Section 2 by providing definitions of both 'land contamination' and 'land contamination liability', and discusses how retroactive liability issues arose. Section 3 then analyzes both theoretical and practical justifications for retroactive liability. Section 4 compares retroactive liability for land contamination in the US with that of several other countries and regions. Section 5 then explores retroactive liability under China's new land contamination law, followed by a brief conclusion in Section 6.

2. ORIGINS OF LIABILITY FOR LAND CONTAMINATION AND THE RETROACTIVITY ISSUE

2.1. *Defining 'Land Contamination' and 'Land Contamination Liability'*

'Land contamination' commonly refers to conditions created by contaminants that cause, or risk causing, damage to health or the environment.[4] Thus, land

[1] 42 U.S.C. Ch. 103, Pub. L. 96-150, 94 Stat. 2767 (11 Dec. 1980). CERCLA was amended by the Superfund Amendments and Reauthorization Act (1986) and the Small Business Liability Relief and Brownfields Revitalization Act (2002).

[2] The text of CERCLA does not expressly impose retroactive liability for clean-up operations on the four categories of Potentially Responsible Person (PRP). Retroactive liability under CERCLA instead has been established by case law and arguably originated in the common law: B. Howard, 'A New Justification for Retroactive Liability in CERCLA: An Appreciation of the Synergy between Common and Statutory Law' (1998) 42(3) *Saint Louis University Law Journal*, pp. 847–64.

[3] See, e.g., Y. Yoon, 'The Impact and Implications of CERCLA on the Soil Environmental Conservation Act [SECA] of the Republic of Korea' (2017) 6(1) *Transnational Environmental Law*, pp. 11–29. Even though the Constitutional Court of the Republic of Korea initially interpreted liability under SECA as being applicable retroactively, it recently reversed its former recognition by holding that retroactive liability under SECA violates 'the principle of legitimate expectations protection' rooted in substantive due process rights of the Korean Constitution. As Yoon points out, although Korea had, to some extent, followed CERCLA and US case law, it had gradually formulated a distinctive liability scheme based on the Korean regulatory context.

[4] See, e.g., Art. 2 of the Federal Soil Protection Act of Germany (1998) (which defines 'contaminated sites' ('*Altlasten*') to include closed-down waste management installations that cause harmful soil changes or other hazards for individuals or the general public). See also s. 78A(2) of Part 2A of the United

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contamination laws (or laws with names to the same effect) are those that aim to establish procedures, responsibilities, and implementation of investigation and (where appropriate) remediation of land that has become contaminated and, therefore, to eliminate damage created by the contaminated site. Liability for land contamination can be broad. It might include, for example, responsibility to repair all damage caused by soil pollution. More specifically, it may include liability for cleaning up soil contamination, long-term damage to the environment or natural resources, and even liability for personal injury or damage to private property.[5] However, liability for land contamination typically refers to the responsibility to clean up contaminated land such that it attains an 'unpolluted' status, or to meet a target set by law such that the land is suitable for a particular use, by either removing pollutants or cutting the transference pathway from contaminants to receptors. Duties imposed by land contamination laws typically include emergency responses, contaminated site investigations, risk assessments, remediation plans, site clean-ups, long-term monitoring and institutional controls.

2.2. *Emergence of the Retroactivity Issue in Land Contamination Liability*

Determining whether a law is being applied retroactively is complex because statutes are enacted at particular moments in time, while legally relevant facts tend to develop over a protracted period. This means that there is often no sharp delineating line. There are several reasons why retroactivity might become an issue when imposing liability on stakeholders for existing land contamination. Soil contamination laws tend to focus on remediating contaminated land rather than on preventing polluting activities (which air or water pollution laws often attempt to address). CERCLA in the US can be taken as an example. Despite vague statutory language and a nebulous legislative history, the US Congress clearly had two essential purposes in mind when enacting the statute. Firstly, Congress intended that the federal government immediately be given the tools necessary for a prompt and effective response to the problems of national magnitude resulting from hazardous waste disposal. Secondly, Congress intended that those responsible for problems caused by the disposal of chemical poisons bear the costs of and responsibility for remediating the harmful conditions they created.[6] Soil contamination laws, therefore, are remedial in nature.

As a result, one of the key legal impacts of the above-stated features of land contamination is the prolonged time period during which legally relevant facts develop. This includes, most importantly, the period between the polluting conduct and the moment at which the consequences of this conduct trigger legal liability. Sometimes, the

Kingdom (UK) Environmental Protection Act 1990 (which provides that 'contaminated land' is '[a]ny 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) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused').

[5] CERCLA in the US stopped short of imposing liability for personal injury or economic loss caused by land contamination. However, many US states have enacted laws that go further than CERCLA. In Minnesota, e.g., statutes impose liability for personal injury and economic loss. Damages that can be recovered in respect of the release of hazardous substances include claims based on economic loss, death, and personal injury or disease: Minn. Stat. Ch. 115B (2018).

[6] See *United States* v. *Reilly Tar & Chemical Corp*., 546 F. Supp. 1100 (D. Minn. 1982).

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polluting conduct, along with the discovery of its consequences, occur before enactment of the new law. Under other conditions the consequences of polluting conduct that occurs prior to the new law are not discovered until after enactment of the new law.

In such circumstances, even though the harm from the disposal continues after enactment of the law,[7] the fact that persons are held liable for past polluting conduct makes this is a retroactive application of law. Firstly, all legally relevant facts – including the polluting activity, the results, causation, and intention (if required for a finding of liability) – took place before enactment of the law. The continuing pollution is evidence of the conduct and its consequences.

Secondly, liability for the clean-up or remediation did not exist under previous rules in force when the conduct or transactions in question took place. Applying land contamination laws retroactively thus reverses the legality of formerly permitted activities. Thirdly, as Daniel Troy argues, many of the companies now being fined by the US Environmental Protection Agency (EPA) under CERCLA were unaware at the time that their activities caused harm and had no reason to expect that they were engaged in unlawful activity. In addition, operators might already have obtained permits to engage in the very activities that now expose them to liability.[8]

Finally, determining the retroactive effect of the law is necessary to identify successor liability for land contamination. If remediation liability does not take effect 'as of the time of those events', successors of the liable persons should not be held responsible for the 'environmental sins of their predecessors'[9] unless they, wholly or partly, contributed to the result. What successors inherit is liability that should have existed before the succession. Otherwise, the objective of land contamination laws to 'resolve existent contaminated sites'[10] will be undermined by successors who needlessly continue or worsen the pollution of their predecessor.

3. JUSTIFICATION FOR RETROACTIVE LIABILITY FOR LAND CONTAMINATION

Given the harshness of the imposition of retroactive liability for land contamination, as outlined above, the question arises of when is the imposition of retroactive liability permissible.

Laws with retroactive effect may be found 'in most if not all legal systems'.[11] Retroactivity – which deals essentially with balancing various interests including private and public rights – is likely to be permissible when certain considerations override the importance of legal certainty. The legitimacy of applying land contamination laws

[7] See, e.g., *United States* v. *South Carolina Recycling & Disposal, Inc.*, 653 F. Supp. 984 (D.S.C. 1984).

[8] D. Troy, *Retroactive Legislation* (AEI Press, 1998), pp. 85–6.

[9] L. Layfield, 'CERCLA Successor Liability, and the Federal Common Law: Responding to an Uncertain Legal Standard' (1990) 68(6) *Texas Law Review*, pp. 1237–72.

[10] J. Surber, 'Back on Track: The Reversal of *United States v. Olin* and the Continuation of Retroactive Interpretation of CERCLA' (1997) 20(2) *Environs: Environmental Law and Policy Journal*, pp. 24–39.

[11] S. Munzer, 'Retroactive Law' (1977) 6(2) *Journal of Legal Studies*, pp. 373–98.

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retroactively is rooted in the public interest. Retroactive liability may be imposed on a person only if the public interest underlying land remediation significantly outweighs the person's interest in relying on past rulings. This line of reasoning affirms the polluter-pays principle, which has as its objective the efficient cleaning up of polluted sites without generating additional financial burdens on governments and taxpayers.

Public interest in the imposition of retroactive liability for land contamination is significant for two main reasons. Firstly, introducing liability schemes for land contamination serves the public interest. Such schemes aim to identify responsible persons to remediate polluted sites and to reduce daily exposure to pollution, pollution involved in agriculture, and pollution transference in order to prevent risks and harm to the public, soil or groundwater system, with a view to reducing environmental damage, the severity of potential damage, and the costs of clean-up if land contamination occurs.[12]

Secondly, decisions to impose liability for land contamination retroactively tend to be made out of necessity. Considering the significant impacts of contaminated sites, determining who is obliged to bear the costs associated with the historical use of land becomes the greatest obstacle in drafting land contamination regulations. Under a retroactive liability scheme the clean-up costs are passed – although typically not entirely – to parties responsible for pollution caused by hazardous waste. Without such a scheme the historically responsible party might receive benefits, while the present landowners would face the clean-up costs. Similarly, the general public would face additional burdens if the financial costs were borne primarily by governments.

However, one should also be aware that the reliance interest of liable parties embedded in good faith in past laws is all too often questionable. Firstly, liability for cleaning up contaminated land is, to varying degrees, foreseeable for potentially liable parties. The general responsibility to gradually reduce, or even eliminate, environmental risks has its roots in early environmental statutes, even though specific laws requiring cleaning up and remediating contaminated sites were lacking for some time. It is also to be expected that legislation and standards will become more rigorous over time in the 'mature and constantly evolving field of (environmental) law'.[13] Secondly, the conduct of many liable parties is culpable because there is no legitimate expectation for parties who undertake illegal emissions or actions. As for land or underwater pollution resulting from lawful emissions and other actions, the actors themselves benefit from production or other activities, while leaving pollutants in the soil; the result is external burdens carried by others or the general public. Thirdly, most liable parties are relatively more economically powerful than those who are injured. Liable parties are also more capable of passing on their losses by increasing prices, taking out insurance, and taking advantage of limited liability for corporations.

Thus, in light of the overwhelming arguments based on public interest, imposing retroactive liability for land contamination is legitimate. At the same time, reasonable

[12] According to estimates in the US, the average cost of a clean-up is USD 30 million per site: T. Church & R. Nakamura, *Cleaning up the Mess: Implementation Strategies in Superfund* (Brookings Institution Press, 1993), p. 8.

[13] A. Tarlock, 'Environmental Law: Then and Now' (2010) 32(1) *Washington University Journal of Law and Policy*, pp. 1–32.

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legitimate expectations, which may be impaired, should be considered when enacting new law. Balancing the public interest and legitimate expectations appropriately is central to any land contamination law that imposes retroactive liability.

4. IMPOSING RETROACTIVE LIABILITY: CURRENT PRACTICES

In view of the legitimacy issues outlined in the previous section, it is natural to examine the extent to which the imposition of retroactive liability for land contamination has been accepted in practice. How is liability imposed retroactively and how are legitimate expectations protected? The 'retroactive, strict, and joint and several liability' in the US CERCLA is the source of land contamination laws and liability schemes for many countries and regions. This section will therefore examine current practices and approaches to retroactive liability in the US, as well as in several other countries and regions.

4.1. *Legislative Language of Retroactivity*

Some countries and regions lack statutes that explicitly state that liability is 'retroactive'. The US offers a model for this approach. CERCLA offers no clear expression of its temporal effect. It does not contain terms such as 'retroactive', or even 'applied to actions prior to this law', and nor does the legislative background to the Act. It was not until 1983 that the retroactivity issue was raised before the courts. In *Brown* v. *Georgeoff* the court held that CERCLA applied retroactively.[14] Since *Brown*, several courts across the US have found that Congress intended CERCLA to apply retroactively in order to hold parties liable for causing contamination before its enactment.[15]

However, after the landmark US Supreme Court case *Landgraf* v. *USI Film Products*,[16] which addressed the retroactivity of law (but not CERCLA specifically), a lower court in *United States* v. *Olin Corp*. found that sections 106 and 107 of CERCLA provided no clear evidence of congressional intent that its liability provisions should be given retroactive effect. Moreover, the court found that the imposition of liability under section 107(a) CERCLA on actions that occurred prior to the statute's effective date (i) impaired the rights a party had at the time of their actions; (ii) increased a party's liability for past conduct, or (iii) imposed new duties with regard to transactions already completed.

The court observed that legislation could not be remedial if the conduct being 'remedied' was lawful at the time of its occurrence.[17] Thus, for a short time *Olin* seemed to indicate that the *Landgraf* decision would lead to courts concluding that CERCLA should not be given retroactive application. The effect of the *Olin* decision did not last long, however, not only because it was quickly rejected by a number of other

[14] *Brown* v. *Georgeoff*, 562 F. Supp. 1300 (N.D. Ohio 1983).

[15] E.g., *ConocoPhillips Pipe Line Co*. v. *Rogers Cartage Co*., No. 3:11-cv-497-DRHDGW, 2012 WL 1231998 (S.D. Ill. 12 Apr. 2012).

[16] *Landgraf* v. *USI Film Products*, 511 U.S. 244, 114 S. Ct. 1483, 128 L. Ed. 2d 229 (1994).

[17] *United States* v. *Olin Corp*., 927 F. Supp. 1502 (S.D. Ala. 1996).

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courts,[18] but also because the decision was soon reversed on appeal.[19] To date, although the US Supreme Court has not heard a case addressing the retroactivity of CERCLA, the weight of the case law from lower courts indicates that CERCLA has retroactive effect.[20]

Other countries and regions explicitly address the issue of temporality in land contamination legislation. For example, many Canadian provinces have passed statutes providing for retroactive liability for remediation. The Environmental Management Act (2003) of British Columbia distinguishes, as persons responsible for remediation, between the current owner or operator of the site, the previous owner or operator of the site, the person who caused the contamination, and the transporter. Moreover, Article 47 of the Act provides that 'a person who is responsible for remediation of a contaminated site is absolutely, retroactively and jointly and separately liable to any person or government body for reasonably incurred costs of remediation of the contaminated site, whether incurred on or off the contaminated sites'.

Similarly, Article 123 of Alberta's Environmental Protection and Enhancement Act (2000) states: 'This Division [Division 2 Contaminated Sites] applies regardless of when a substance became present in, on or under the contaminated site'. Among Canada's 13 provinces and territories, nine hold parties retroactively liable for land contamination resulting from pre-enactment activities, and contain clear expressions of retroactive liability in their basic environmental and related statutes.[21] The retroactive effect of these liability schemes, whether clearly outlined in the text of the legislation or affirmed by the courts, sometimes generates fierce debate among legislators, administrators, judges, and affected parties in various jurisdictions. In fact, the retroactive effect of a law may be challenged even when relatively clear statements are made in the statute. In one case, for example, the environmental agency of Taiwan of China sought recovery of remediation costs against a petroleum corporation. This was challenged by the corporation despite provision 53 of the Soil and Groundwater

[18] See, e.g., *Gould Inc.* v. *A&M Battery & Tire Service*, 933 F. Supp. 431 (M.D. Pa. 1996); *United States* v. *Northeastern Pharmaceutical & Chemical Co., Inc.*, 810 F.2d 726 (8th Cir. 1986).

[19] *United States* v. *Olin Corp.*, 927 F. Supp. 1502 (S.D. Ala. 1996), rev'd, 107 F.3d 1506 (11th Cir. 1997).

[20] *ConocoPhillips Pipe Line Co.*, n. 15 above.

[21] The Contaminated Sites Remediation Act of Manitoba (1997) (CCSM c. C205), s. 3, provides: 'Subject to subsection (3), this Act applies to a site that has been contaminated regardless of whether (a) the site became contaminated (i) before or after the coming into force of this section, or (ii) because of an act or omission that was permitted or not prohibited by any law or license; or (b) another proceeding has been, is or may be taken under any other Act of the Legislature in respect of the site or the contamination'. The Environment Quality Act of Quebec (1990) (c. 26, s. 4), s. 31.43, states: 'Where it appears to the Minister that contaminants are present in the land in a concentration exceeding the limit values prescribed by a regulation made under section 31.69, or that the contaminants, even though they are not determined in the regulation, are likely to adversely affect the life, health, safety, welfare or comfort of human beings, other living species or the environment in general, or to be detrimental to property, the Minister may order any person or municipality that, even before the coming into force of this section, had emitted, deposited, released or discharged all or part of the contaminants or had allowed the contaminants to be emitted, deposited, released or discharged; or after the coming into force of this section, has or has had custody of the land as owner or lessee or in any other capacity …'. The Environmental Protection Act of Newfoundland and Labrador (2002) (c. E-14.2), s. 24 provides: 'This part (Part VII Contaminated Sites) applies regardless of when a substance became present in, on, over or under a contaminated site'.

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Pollution Remediation Act (2000, revised in 2010) in Taiwan of China, which states that '[p]olluters are liable for remediating land or ground water pollution occurred before the enactment of the law'.[22] This resulted in Judicial Interpretation No. 714, which was issued by a Justice of the Constitutional Court, which clarified that making polluters liable for pollution generated before the enactment of a new law does not contradict the 'non-retroactive principle'.[23]

4.2. *Who Should Bear Liability on a Retroactive Basis?*

Broadly speaking, potentially liable parties fall within two categories: those who caused land contamination, and those who did not cause such contamination. Included in the first category are producers, transporters, and disposers, whose activities caused the entry of the pollutant into the soil. The second category includes owners, occupiers, managers of the land, or facilities that did not directly cause pollution. The question then becomes who should bear liability on a retroactive basis.

Complete retroactivity

Countries or regions such as the US and the Canadian provinces of Alberta, British Columbia, and Manitoba impose retroactive liability, both on those who caused land contamination and those who did not. This occurs under the general assumption that they both have a connection with the contamination at the site, even if it is weak.[24] As a result, parties who owned, occupied, or managed the property historically are liable, although they may also suffer from the contamination.[25] For purposes of

[22] The petitioner, China Petroleum Chemicals Industrial Development Corporation merged with Taiwan Alkali Industry Corporation (referred to here as Taiwan Alkali Co., a now defunct corporation) in 1983 under the direction of the Ministry of Economic Affairs. In 2004, the Tainan City government determined that the dioxin and mercury pollution of the An-Shun Factory, as well as other facilities originally belonging to the Taiwan Alkali Corporation, was attributable to its processing of pentachlorophenol between 1965 and 1978, and that the company was the polluter. Taiwan Alkali Co. was held liable under the Soil and Groundwater Remediation Act (2001). Since the petitioner had merged with and absorbed its legal personality, all general liability was to be assumed by China Petroleum. Tainan City ordered the petitioner to pay New Taiwan dollars (NTD) 652,221 as a remediation fee and to provide land to store the pollutants. The petitioner failed to comply. The cost was doubled, with a penalty and late fee, in accordance with relevant rules, making a total of NTD 2,858,881. The petitioner instituted administrative proceedings to contest the order. It contended that the Ministry of Economic Affairs had failed to supervise the two corporations properly and that the Ministry's forced merger of the two corporations was an illegal exercise of public power. The petitioner sued for state compensation. However, the court affirmed that all claims were to be rejected. A petition for a constitutional interpretation on the ground that the relevant law violated the principle of the prohibition on retroactive laws was lodged in 2013.

[23] J.Y. Interpretation No. 714 of the Constitutional Court of Taiwan, 'Liability for Pollution Produced Prior to the Entry into Force of the Soil and Underground Water Pollution Control Act', 15 Nov. 2013.

[24] Troy, n. 8 above, p. 88.

[25] There is divergence between states in their definition of owner/occupier of the property as well as the imposition of retroactive liability. In Utah, e.g., liability may not be apportioned against a current or previous owner or operator who acquired or became the operator of the facility on or after 18 Mar. 1985, who may otherwise be a responsible party but who did not know and had no reason to know, after having made all appropriate inquiries into the previous ownership and uses of the facility, consistent with good commercial or customary practice at the time of the purchase, that any hazardous material which is the subject of a release was on, in, or at the facility prior to the acquisition or operation of the facility, and the release is not the result of an act or omission of the current or previous owner or operator: Utah Code Ann.

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efficiency in identifying liable parties, as well as for purposes of fairness, those who did not cause the land contamination are entitled to pursue those who did cause the contamination for the costs of remediation. Sometimes, however, those who did not cause the contamination become the 'deep pockets' who, in practice, bear the costs when those who did cause the contamination disappear or are unable to pay for the remediation.

Partial retroactivity

In contrast, other countries or regions provide for different kinds of liability – with different temporal effects – for those who caused land contamination and those who did not. Some regions, such as Taiwan of China, place retroactive remediation liability only on those who caused the contamination, including those who leaked or disposed of waste; illegally emitted or injected waste; arranged for, or approved, illegal emission or discharge; and those who treat pollution in violation of relevant laws or regulations. Those who did not cause the contamination – which may include occupiers, managers, or owners of a site when it is declared a 'Polluted Site under Control' or 'Polluted Site under Remediation' – are responsible only for land remediation if the polluters fail to fulfil their duty.[26]

In Germany, the Federal Soil Protection Act extends liability to current and former owners. However, liability is not always imposed retroactively on property owners, as a finding of liability requires (i) that they transferred the property after 1 March 1999, the effective date of the Act; and (ii) that they knew or should have known of the relevant harm; unless (iii) they were convinced at the time of acquiring the property that no harm was present, and that belief is worthy of protection in the circumstances of the particular case.[27] The date of effect of the law means that former owners can be held liable only if they transferred the property after the date on which the Act came into effect. Similarly, Part 2A of the United Kingdom (UK) Environmental Protection Act provides that the following parties are liable: 'The person(s) who caused or knowingly permitted the contaminating substances to be in, on or under the land in question; and the owner or occupier for the time being of the contaminated land'.[28]

§ 19-6-310 (2016). The Hazardous Site Cleanup Act of Pennsylvania provides a definition and exceptions applicable to the owner of property: 35 P.S. § 6020.701. However, the circular definition of 'property owner' is not that helpful in clarifying retroactivity issues of their liabilities. Courts sometimes rely on state common law to assign owner liability. For example, in *City of Los Angeles* v. *San Pedro Boat Works*, 635 F. 3d 440 (9th Cir. 2011), the City of Los Angeles claimed that the successor was an 'owner' under CERCLA. However, the appeal court held that the successor was not liable as 'owner' because, based on Californian common law, the permittee under a revocable permit for specific use of real property was not the owner of that property where the fee title owner retained power to control the permittee's use of that property. A mere possessory interest in the use or enjoyment of real property did not constitute 'ownership'. The court intended the scope of liability to be determined from traditional and evolving principles of common law. Thus, San Pedro Boat Works, as successor, was not liable for nuisance because the permittee did not know or have reason to know of the contamination.

[26] Soil and Groundwater Pollution Remediation Act of Taiwan of China (2000, revised in 2010), Arts 15, 17, 25.

[27] Federal Soil Protection Act of Germany (1998), n. 4 above, Art. 4.

[28] UK Environmental Protection Act 1990, n. 4 above, Part 2A, s. 78(F).

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Furthermore, the Environment Quality Act of Quebec provides that liability for rehabilitating contaminated land is retrospectively imposed only on those who 'had emitted, deposited, released or discharged all or part of the contaminants or had allowed the contamination to be emitted, deposited, released or discharged even before the coming into force of this section'. Liability can be imposed prospectively on those who 'ha[ve] or ha[ve] had custody of the land as owner or lessee or in any other capacity after the coming into force of this section'.[29]

While it is common for countries and regions to impose retroactive liability on those who caused land contamination, there is less consistency with regard to imposing retroactive liability on past landowners, occupiers or controllers who did not cause the contamination.[30] Whether the liability of the latter group constitutes retroactive application of the law is more complicated. Assigning responsibility to current landowners or controllers does not constitute retroactive application of the new law as none of their activities took place prior to the new law. More importantly, their liabilities are all too often subordinate to the liability of the polluters and they are able to obtain recovery from those who actually caused the pollution. Thus, the legitimacy of their liability comes from the social responsibility of their land entitlement or, more specifically, their de facto controlling power, rather than any culpable earlier conduct. However, imposing liability on past landowners or controllers who have already lost controlling power over the land before enactment of new law might trigger retroactivity concerns. Despite the fact that the liability of the former landowner or manager is also subordinated to and compensable on the same basis as that of the current owners, they might be burdened with site remediation responsibilities in practice as a result of the inability of the polluters to meet this cost. Therefore, the liability retrospectively attaches new legal consequences to parties who are formerly associated with the contaminated land by ownership or stewardship, and the legal effect did not exist under the old law.

Systems with an inclusive approach to assigning liability – covering both polluters, and current and past non-polluters – tend to identify liable parties to promptly and adequately clean up the sites. They rely on judicial remedies to redress any distributive unfairness that may result from this approach. However, it might result in overload litigation and 'deep pocket' issues, where the ability to pay, rather than the actual share of the liability, is what allocates the burden in practice.[31] In jurisdictions where retroactive

[29] Environment Quality Act of Quebec (1978) (CQLR c. Q-2), s. 31.43.

[30] Japan is one of the few exceptions. Japan makes liable parties – whether landowner, operator or polluter – accountable for soil contamination only after the enactment of the Law for Remediation of Soil Contamination (Art. 3, Annex). The liability of the owner or operator of facilities or land, and polluters, is allocated as follows. Firstly, if soil contamination on the premises of such facilities or properties is attributable to its owner or operator, the owner or operator is liable for the costs of remediation. Secondly, if the owner or operator was not the polluter, then those who caused the soil contamination are subject to remediation orders from the governors. Thirdly, if innocent landowners or operators are unable to find a polluter, they are required to eliminate soil contamination at their own cost but are entitled to indemnification from the polluter if the polluter is later found.

[31] Under CERCLA, several parties may be involved in cleaning up contaminated sites on the national priority list. This has resulted in considerable inefficient, lengthy, and complicated litigation resulting in excessive transaction costs. Studies have shown that 30–60% of the funds associated with CERCLA

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liability is applied only to those who caused the land contamination, social equity considerations, such as avoiding the 'deep pocket' approach, are important determinants. Overall, in addition to temporal functions, the scope of retroactive liability defines the scope of liable persons.

4.3. *Temporal Limitations on Retroactive Liability*

As retroactivity involves the temporal impact of new legislation, a significant question arises when creating the regulatory framework for the liability scheme. Should persons who are liable retroactively under the analysis discussed above be so liable to infinity?

Infinite retroactive liability

In the US, both statutory law and case law impose liability for land contamination without regard to when the pollution occurred, which means that there is no time limitation for liability that originates from pre-enactment activities. As the US EPA claims, although nominally compensatory in nature, this gives CERCLA distinctively punitive aspects and applications.[32]

Time-restricted retroactive liability

Some jurisdictions attempt to restrict the temporal scope of retroactive liability rules by breaking down liability based on different time periods. Finland, for example, designates the polluter as the first responsible party. Under the Finnish Environmental Protection Act (527/2014), the title holder of the property is the secondary responsible party for contamination that occurred after January 1994. Additionally, Finnish case law has established rules on retroactive application and temporal phases.

With regard to soil pollution, case law imposes liability on the polluter and the holder of property for historical soil contamination caused by activities between 1 April 1979 and 31 December 1993, under the former Waste Management Act (673/1978). If the polluting conduct ended before 1 April 1979 and caused soil contamination, only the property holder is liable.[33] As for groundwater pollution which accompanies soil pollution, based on the former Water Act (264/1961) liability can be imposed retroactively to activities after 1 April 1962.[34] Thus, retroactive liability differs according to when the relevant law was enacted.

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were spent on litigation and negotiation with potentially liable subjects. The liability mechanism has long been confronted with criticism as to its unfairness and violation of the polluter-pays principle: M. Judy & K. Probst, 'Superfund at 30' (2009) 11(2) *Vermont Journal of Environmental Law*, pp. 191–248; W.N. Hedeman, J.Z. Cannon & D.M. Friedland, 'Superfund Transaction Costs: A Critical Perspective on the Superfund Liability Scheme' (1991) 21(7) *Environmental Law Reporter*, pp. 10413–26; M. Gergen, 'The Failed Promise of the "Polluter Pays" Principle: An Economic Analysis of Landowner Liability for Hazardous Waste' (1994) 69(3) *New York University Law Review*, pp. 624–92.

[32] G. Freeman, 'Inappropriate and Unconstitutional Retroactive Application of Superfund Liability' (1986) 42(1) *Business Lawyer*, pp. 215–48.

[33] Supreme Administrative Court, KHO 2006, 30.

[34] Supreme Administrative Court, KHO 1996, A29.

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Similarly, landowners and polluters in the Netherlands are generally not liable for historical land contamination caused by activities that occurred before 1 January 1975, which is the date by which polluting enterprises should have become aware of the government's intention to make them liable for such activities. Before that date, they are presumed not to have had knowledge of the harmful effects of such pollution.[35] The government pays for remediating pollution that occurred prior to 1975. For contamination caused by activities between 1 January 1975 and 1 January 1987, landowners and polluters are liable for site investigations and remediation costs. Any refusal to fulfil or a delay in fulfilling this duty will trigger a scheme whereby the government pays for remediation and the liable party is required to reimburse the government. After 1 January 1987 – when the Soil Pollution Act came into effect – anyone whose conduct may have effects on land must adopt all necessary measures to prevent land contamination, and eliminate potential damage or the risk of releasing pollutants, as well as remediation when required.[36]

Fixed-time retroactive liability

In Denmark the limitation period for soil contamination liability is 20 years. As a consequence, a polluter cannot be held liable for contamination that took place more than 20 years earlier, irrespective of whether the polluter acted in bad faith.[37]

Fundamentally, jurisdictions in the first category – infinite retroactive liability – tend to ignore the legitimate expectations of potentially responsible parties. However, the latter two categories – time-restricted and fixed-time retroactive liability – protect, in slightly different ways, the interests of potentially responsible parties. A justification for this might be that land contamination was not something of which the general public and regulators were aware until the 1970s/80s. When the legal consequences of actions are changed after the fact, actors are deprived of notice and opportunities to adjust their behaviour, which might have included either adopting more stringent preventive measures or cost-spreading mechanisms (such as environmental liability insurance).[38] Thus, some jurisdictions have determined that time-restricted or fixed-time retroactive liability is an effective tool for removing the harshness of retroactive liability, especially when combined with the various temporal phases in which liability is imposed differently.

4.4. *Interaction between Retroactive Liability and the Standard of Liability*

Some jurisdictions take temporal features into account in determining the standard of liability while others do not. For countries or regions that do take temporal features into account, how this is accomplished tends to vary.

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[35] *Netherlands State* v. *Akzo Resins*; and *Van Wijngaarden* v. *Netherlands State*, Hoge Raad, 24 Apr. 1992, NJ 1993, 642 and 643.

[36] *Netherlands State* v. *Van Wijngaarden*, Hoge Raad, 24 Apr. 1992, LJN ZC0576; *Netherlands State* v. *AKZO Resins*, Supreme Court 24-04-1992, LJN AD1660.

[37] C. Ferguson, 'Assessing Risks from Contaminated Sites: Policy and Practice in 16 European Countries' (1999) 7(2) *Land Contamination and Reclamation*, pp. 87–108.

[38] K. Slattum, 'Is the United States *v.* Olin Decision Full of Sound and Fury Signifying Nothing: The Future of Retroactive Liability of the Comprehensive Environmental Response, Compensation, and Liability Act' (1997) 25(1) *Pepperdine Law Review*, pp. 141–82.

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Separation between retroactive liability and the standard of liability

Courts in the US agree that strict liability applies for violations of CERCLA, although that standard is not stated expressly in the statute.[39] Therefore, a strict liability standard applies to hazardous conditions that were created prior to the enactment of CERCLA on 11 December 1980, even though such activities may have been completely lawful at the time, that is:

> The 'polluter' conformed scrupulously to then-current state-of-the-art pollution control standards or the Potentially Responsible Person (PRP) was a lawful waste generator that used a lawful transporter to haul the waste to a lawful landfill that, decades later, was declared a hazardous waste site.[40]

Strict liability is the standard regardless of when the conduct leading to the site pollution occurred.

Interrelationship between retroactive liability and standard of liability

Several other jurisdictions, however, take a different approach and vary the standard of liability depending on whether the law is being applied retroactively. The Flemish Region of Belgium is a typical example. Strict liability is applied to new soil pollution which originated after 28 October 1995, the effective date of the Soil Remediation Decree (1995). The standard of liability for pollution (or, more accurately, legal responsibility for soil investigation and remediation) after 1995 is objective: it is strictly at the expense of whoever caused soil pollution by any emission. Conversely, strict liability does not apply for historical soil pollution that took place before the effective date of the Decree. If the person obliged to remediate did not cause the pollution, they may try to recover the costs incurred in accordance with the liability rule that applied before the effective date of the 1995 Decree. For pollution that occurred before the 1995 Decree, the standard of liability for pollution is based on the civil code or liability rules stipulated in other legislation.[41]

Similarly, in the Netherlands, a strict liability standard applies when damage is the result of an incident that took place after 1 February 1995, when the Act on Liability for Dangerous Substances and the Pollution of the Air, Water and Soil became effective, whereas the general standard of tort liability applies (which means that fault must be established) for incidents that occurred before the effective date of the 1995 legislation.[42] Western

[39] L. Oswald, 'Strict Liability of Individuals under CERCLA: A Normative Analysis' (1993) 20(4) *Boston College Environmental Affairs Law Review*, pp. 579–638.

[40] C. Kundis, 'Federalisms Challenges to CERCLA: An Overview' (2012) 41(4) *Southwestern Law Review*, pp. 1–30.

[41] See Art. 32(1) Flemish Soil Remediation Decree (1995); L. Lavrysen, 'Legislation on Soil Remediation in the Flemish Region of Belgium: Prevention and Remedying of Environmental Damage', in *International Seminar on Law Regulating Soil Contaminations* (Environment Protection and Resource Conservation Committee, National People's Congress of the People's Republic of China, 2007), available at: https://biblio.ugent.be/publication/631325/file/631386.

[42] E. Bauw, 'Liability for Contaminated Land: Lessons from the Dutch Experience' (1996) 43(2) *Netherlands International Law Review*, pp. 127–41.

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Australia introduced the Contaminated Sites Bill (2002) to apply different standards of liability to past and future damage, reserving strict liability for the latter.[43]

Courts in other countries and regions have limited the application of strict liability, or any liability, through cases on issues that were not anticipated by the enacting authorities. In Denmark, several lawsuits during the 1990s established that strict liability for contaminated sites cannot be applied under Danish civil law. Additionally, the Danish Contaminated Soil Act (1999) applies strict liability to pre-2001 contamination only if a substantial part of the pollution occurred after 2001. However, a strict liability standard still exists under the 1994 Act for contamination that took place between July 1994 and December 2001.[44] Before 1994 there is no strict liability, and authorities would need to prove negligence on the part of the polluters.[45] Accordingly, the Danish Supreme Court has ruled against the Ministry of Environment and Energy in a number of cases where it could not prove that the polluter was acting in bad faith when the pollution occurred.[46]

Case-based judgment

Some jurisdictions have attempted to develop rules to connect retroactive liability and the standard of liability on a case-by-case basis. For example, Article 4(5) of the German Federal Soil Protection Act (1998) provides:

> If harmful soil changes or contaminated sites have occurred after 1 March 1999, pollutants shall be eliminated, where this is a reasonable requirement with respect to the previous soil pollution. This shall not apply to a party who, at the time the pollution was caused, expected that such impacts to the soil would not occur because he had fulfilled the applicable legal requirements, and whose good faith is worthy of protection, taking the circumstances of the relevant individual case into account.

Simply recognizing the complexity of real-life scenarios motivates a case-by-case approach as to whether a strict liability standard should be used when applying the law retroactively.

4.5. *Limitations on Liability*

Among the jurisdictions investigated in the foregoing section, liability caps and other limitations on liability are common features. Taiwan of China places a 50% ratio limit on the liability of parties who did not act wrongfully.[47] CERCLA also provides

[43] The Contaminated Sites Act of West Australia (2003), s. 25(1)–(3), states: 'A person is responsible for remediation of a site to the extent that the person caused, or contributed to, the contamination of the site after the commencement of this Act … whether the contamination resulted from an act that was done with lawful authority or without lawful authority. A person who caused, or contributed to, the contamination of a site before the commencement of this Act is responsible for remediation of the site only to the extent that the person caused, or contributed to, that contamination by an act that was done without lawful authority'.

[44] R.V. Percival, K.H. Cooper & M.M. Gravens, 'CERCLA in a Global Context' (2012) 41(4) *Southwestern Law Review*, pp. 727–72.

[45] L. Eskesen & U. Jensen, *Denmark*, *International Comparative Legal Guide*, available at: http://www.iclg.co.uk/books/el/page3.php?page=country_de.htm.

[46] Concerted Action on Brownfield and Economic Regeneration Network (CABERNET), 'Country Profile Denmark', available at: http://www.eugris.info/displayresource.aspx?r=347.

[47] Soil and Groundwater Pollution Remediation Act of Taiwan, provision 43.

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for a limitation on liability up to a certain amount.[48] The minor contributor and voluntary remediation agreement mechanisms adopted in several jurisdictions play the role of a buffer against the severity of retroactive liability.

In British Columbia (Canada), for instance, persons regarded as minor contributors can voluntarily agree upon an amount or proportion of the total remediation costs attributable to them.[49] Upon reaching such a voluntary remediation agreement with an administrator, the future liabilities of other responsible parties will be exempted accordingly.[50] Although these measures are not designed intentionally to alleviate the severity of retroactive application, their application to pre-enactment conduct could have an impact on the extent of retroactive liability. In addition, minor contributors and voluntary remediation agreements are widely used to limit the effects of retroactive liability.

To conclude, my comparative study shows that almost all countries have either adopted, or tacitly approve of, retroactive liability for land contamination. The retroactive application of new law is unavoidable if the desire is to find liable parties to pay for the cost of removal and remediation. However, the liability schemes implemented in the countries and regions investigated vary with regard to the types of responsible party, the timing of conduct for which liability was imposed, and the standard of liability, among other factors. Buffer mechanisms are also important to ease the harshness of these retroactive laws and to protect legitimate expectations, eliminate the distaste for retroactive laws, and to find equilibrium between protecting human health and the environment and land use.

When balancing these two key factors, social economic factors also play an important role. The Soil Protection Act (1994) of the Netherlands introduced a far more stringent system for contamination liability than that under the Interim Soil Clean-up Act (1983).[51] The change was brought about largely by a gradual increase in awareness of the scale of land contamination and the total economic cost of inaction. In 1981, about 350 sites in the Netherlands were thought to be contaminated and possibly in

[48] 42 U.S. Code § 9607(c)(1): 'Except as provided in paragraph (2) of this subsection, the liability under this section of an owner or operator or other responsible person for each release of a hazardous substance or incident involving release of a hazardous substance shall not exceed — (A) for any vessel, other than an incineration vessel, which carries any hazardous substance as cargo or residue, $300 per gross ton, or $5,000,000, whichever is greater; (B) for any other vessel, other than an incineration vessel, $300 per gross ton, or $500,000, whichever is greater; (C) for any motor vehicle, aircraft, hazardous liquid pipeline facility (as defined in section 60101(a) of title 49), or rolling stock, $50,000,000 or such lesser amount as the President shall establish by regulation, but in no event less than $5,000,000 (or, for releases of hazardous substances as defined in section 9601(14)(A) of this title into the navigable waters, $8,000,000). Such regulations shall take into account the size, type, location, storage, and handling capacity and other matters relating to the likelihood of release in each such class and to the economic impact of such limits on each such class; or (D) for any incineration vessel or any facility other than those specified in subparagraph (C) of this paragraph, the total of all costs of response plus $50,000,000 for any damages under this subchapter'.

[49] Environmental Management Act of British Columbia (2003), s. 50.

[50] Ibid., s. 51.

[51] For detailed analysis see Bauw, n. 42 above, p. 134.

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need of remedial action. By 1995, the number had grown to 300,000 sites, with an estimated clean-up cost of 13 billion euros.[52]

5. IMPLICATIONS FOR LAND CONTAMINATION LIABILITY IN CHINA

The retroactive imposition of liability for land contamination exists in many jurisdictions with land contamination legislation, even if the features of such retroactive liability vary. The issue, however, remains crucial for jurisdictions where comprehensive land contamination laws have not yet been developed. The decision whether to impose retroactive liability is key in defining the scope of liability. China, one of the world's largest countries, is undergoing high-speed industrialization along with serious environmental degradation.

Land contamination in China can be traced back to the 'Great Leap Forward' in the 1950s, with some issues emerging even before the establishment of the People's Republic of China (PRC) in 1949.[53] Between 2005 and 2013 China conducted a National Land Contamination Survey. It took samples from survey units across 6.3 million square kilometres (two-thirds of the country's land area). Of the investigated units, 16.1% showed contamination that exceeded permitted levels. Of these surveyed units, 11.2%, 2.3%, 1.5%, and 1.1% respectively were subtly, lightly, moderately, or heavily polluted. As for sites such as industrial sites with high pollution density and landfill sites, around 30% of those surveyed revealed signs of contamination.[54]

Faced with this evidence, the National People's Congress spent 12 years drafting national legislation to address the problem. It finally enacted the PRC Law on the Prevention and Control of Soil Pollution (Soil Pollution Law) in 2018, which came into effect on 1 January 2019. The terms of the law are still broad and require detailed regulations, standards, and other enforcement mechanisms. Thus, the following section examines retroactive liability under China's new land contamination legislation and considers what, if any, improvements might be necessary in light of the lessons from the comparative study in Section 4 above.

5.1. *Liability for Land Contamination in China's New Law on the Prevention and Control of Soil Pollution*

The new Soil Pollution Law in China[55] requires site investigation, site risk assessment, risk control, remediation, evaluation of site risk control and remediation, and long-

[52] C. Nathanail & R. Bardos, *Reclamation of Contaminated Land* (John Wiley & Sons Ltd, 2004), p. 2.

[53] J. Xie & F. Li, 'Overview of the Current Situation on Brownfield Remediation and Redevelopment in China', The World Bank, Sept. 2010, p. 3, available at: http://documents.worldbank.org/curated/en/450251468024319815/Overview-of-the-current-situation-on-brownfield-remediation-and-redevelopment-in-China.

[54] PRC Ministry of Environmental Protection, Ministry of Land Resources, 'Report on National Land Contamination Investigation Survey', 2014 (in Chinese), available at: http://www.gov.cn/foot/site1/20140417/782bcb88840814ba158d01.pdf.

[55] Law of the PRC on the Prevention and Control of Soil Pollution, Chairman's Decree No. 8, entered into force 1 Jan. 2019, available at: http://www.npc.gov.cn/npc/c30834/201808/13d193fc25734dee91da8d703e057edc.shtml (in Chinese). The Law only loosely defines relevant terms and, in some instances, provides no definition at all: e.g., there is no definition of key terms such as 'soil', 'soil pollution', 'parties

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term stewardship.[56] When contaminants may be present at a site, site investigation is required to obtain data on the physical characteristics of the site and the characteristics of the hazardous substances, including (but not limited to) quantity, toxicity, concentration, and mobility.[57] If the contaminant exceeds the threshold level in the national standard on risk control of land contamination,[58] risk assessment should be carried out to evaluate the risk and to determine whether responsive action is needed to mitigate impacts on the safety of agricultural products, public health, and the environment.

Remediation targets and basic requirements for remedial action should also be included in any risk assessment report.[59] Responsible parties are obliged to take action through the procedure of risk management or remediation. The former includes cutting off or blocking the potential pathway of contamination from hazardous substances by, for example, fencing, alternative agricultural planation, restrictions on land usage, and continual monitoring of contamination. Remediation might include cleaning up or removing the hazardous substance, or lowering the concentration or toxicity of contaminants in soil, to reduce the environmental risk to acceptable levels. The main difference between the two measures is whether pollutants have been removed and any contamination has been reduced.

Those with legal obligations related to land contamination are 'parties liable for land contamination', owners of usufructuary rights,[60] and local government. The Soil Pollution Law provides no explanation of the scope of parties liable for land contamination. According to the explanatory memorandum of the Law, the legislators intend it to refer to parties who caused the contamination. Under the polluter-pays principle – stipulated in Article 3 of the Law – parties liable for land contamination are responsible for remedial action, including site investigations, site risk assessment, risk control, remediation, evaluation of site risk control and remediation, and long-term stewardship.[61] Owners of usufructuary rights become responsible parties if 'parties liable for land contamination' – or, more accurately, polluters – are unable to be identified.[62] If the polluter and owners of usufructuary rights cannot be identified, the

liable for soil pollution', 'site investigation', 'risk assessment'. The definitions used for this article are derived from the legislative history documents and Law and Standard Branch of the PRC Ministry of Ecological Environment, *Application Manual of the Law of the PRC on Prevention and Control of Soil Pollution* (Law Press, 2018).

56 PRC Soil Pollution Law, Art. 35. For a more detailed discussion of risk control and remediation procedures in China's Soil Pollution Law, see T. Li et al., 'Soil Pollution Management in China: A Brief Introduction' (2019) 11(3) *Sustainability*, pp. 556–70.

57 PRC Soil Pollution Law, Art. 36.

58 Soil Environmental Quality: Standard on Risk Control of Soil Pollution in Agricultural Land (GB 15618-2018) and Soil Environmental Quality: Standard on Risk Control of Soil Pollution in Constructional Land (GB 36600-2018).

59 PRC Soil Pollution Law, Art. 37.

60 Since the 1980s China has developed a real-property rights system with three main types: (i) ownership rights, (ii) usufructuary rights, and (iii) security rights. Holders of usufructuary rights, which might be enterprises or individuals, have the right to possess, utilize and obtain profits from the land. Compared with ownership rights, usufructuary rights are incomplete: e.g., owners have no right to sell the land.

61 PRC Soil Pollution Law, Arts 45 and 46.

62 The Soil Pollution Law immediately empowered the administrative agencies of local government to identify parties liable for land contamination through administrative procedures in Art. 48.

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local government has obligations under the law. Funding and legal powers are granted to local governments for soil pollution prevention by the central and provincial governments.[63]

5.2. *Retroactivity: An Unresolved Issue in China's Soil Pollution Law*

General provisions

The new Soil Pollution Law of the PRC remains silent on the issue of retroactive liability for land contamination. No provision of the law provides explicitly that 'parties liable for land contamination' are responsible for such contamination, regardless of when the contamination occurred. Similarly, the Law does not state explicitly whether current owners or past owners of usufructuary rights are liable for past contamination.

The only exception to this is found in Article 71(2), which provides that the 'owners of usufructuary rights may apply for provincial funding for soil pollution prevention and control to cover funds spent on sites that were contaminated prior to enactment of the law when polluters (liable parties) cannot be identified'.[64] From this language, it might be inferred that the legislators intended to hold 'parties liable for land contamination' (i.e., the parties that caused the pollution) retroactively liable for contamination generated prior to the enactment date of the new law. This provision is one of the few pieces of indirect evidence to support an argument that the Law applies retroactively to polluters.

It may be that legislators take for granted the fact that polluters are liable retroactively and therefore fail to describe retroactive liability in more detail. In some of the early land contamination regulations and local legislation enacted prior to the Soil Pollution Law similar approaches had been adopted.[65] The general understanding that laws apply retroactively may have its roots in Article 84 of the PRC Law on Legislation (2000), which stipulates that laws, regulations, rules, and by-laws can only be applied prospectively, except for special provisions to protect the rights and interests of citizens, legal persons, and other organizations.

Despite authorization for some retroactive provisions in the Law on Legislation, the decision of the legislators to imply that China's new Soil Pollution Law can be applied retroactively remains questionable. Article 84 of the Law on Legislation is itself questionable because determining whether laws will protect the rights and interests of citizens, legal persons, or other organizations is difficult. Something that protects the rights or interests of one party may, in fact, harm those of another. As discussed in Section 3,

[63] PRC Soil Pollution Law, Art. 71.

[64] As described in Section 2 above, land contamination occurs when pollutants accumulate to a certain level, thereby generating harm, or the risk of harm, to the environment and human health, regardless of when the site investigation is initiated to legally clarify that the site is, in fact, contaminated.

[65] See various provincial land contamination laws, such as the Regulation on Prevention and Control of Soil Pollution of the Hubei Province (2016), which states in Art. 23 that contaminated sites should be controlled and remediated by the entities and individuals who caused the pollution. Governments at the county level and above are responsible for the control and remediation if identification of liable parties cannot be accomplished. See further X. Li et al., 'Contaminated Sites in China: Countermeasures of Provincial Governments' (2017) 147 *Journal of Cleaner Production*, pp. 485–96.

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imposing liability retroactively for land contamination is permissible only if public interests underlying land remediation significantly outweigh an interest in legal certainty. This is a different requirement from the complex judgment call required by Article 84 of the Law on Legislation. Even though both the public interest test and the test articulated in Article 84 would point to the conclusion that land contamination laws should be applied retroactively, only a proper balance between the public interest and legitimate expectation can justify the imposition of retroactive liability.

It may be more plausible that the Chinese legislators failed to address retroactive liability for land contamination in the law explicitly because they did not understand its importance rather than because a legal justification was already provided via Article 84 of the Law on Legislation. Nevertheless, retroactive liability plays an important role in a complete liability system and helps to convince people that the liability system, and the land contamination law as a whole, are sound.

Weakness of the remediation arrangements in China's Soil Pollution Law

Among the land contamination strategies selected by the Chinese legislators, the first was the adoption of two parallel remedial actions: risk management, and remediation. With regard to land used for construction, the target value of remediation and clean-up costs depends substantially on how the land will be used in the future. In the absence of clear definitions of the meaning, scope, and applicable conditions for either risk management or remediation, affected parties will naturally spare no effort in proving that the lower-cost and easier-to-achieve risk assessment and management procedure is sufficient.[66]

Given that the environmental protection agency at the provincial level has only the power to evaluate (but not approve) risk assessment reports submitted by the liable parties,[67] and that the outcome of remediation actions is evaluated by a third party,[68] the remedial procedure is dominated mostly by responsible parties and third parties. Even though administrative penalties are provided, non-compliance incentives persist because the economic benefit of breaking the law is much greater than that of complying with the law.

The requirement to remediate polluted agricultural sites reveals similar issues. Under an overarching classification regime, agricultural land is divided into land of prioritized protection, land of safe utilization, and land of strict control. Local government agencies undertake site investigations and risk assessments of agricultural areas, rural areas, forests, prairies, and so on, but only sites on which agricultural products are polluted are required to be remediated by the 'parties responsible'. This allocation of remediation responsibilities, which holds polluters responsible only if agricultural products are polluted, apparently conflicts with Article 46, which provides that response costs

[66] Even the requirement of remediation in the new Chinese Law might be much lower than the remedial action required by CERCLA in the US: for more detailed information, see X. Zhao, *Developing an Appropriate Contaminated Land Regime in China: Lessons Learned from the US and UK* (Springer, 2013), p. 171.

[67] PRC Soil Pollution Law, Art. 61.

[68] Ibid., Arts 57 and 65.

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(including site investigations, risk assessment, risk control, remediation, outcome evaluation, and long-term stewardship) should be borne by parties liable for the land contamination. Moreover, the Soil Pollution Law does not empower usufructuary rights holders, recipients of government funds, government agencies, or other parties who execute response actions to pursue recovery from 'liable parties'. Thus, it appears that the arrangements for contaminated agricultural lands constitute an exception to the general regime.

If so, liability for contaminated agricultural land is quite limited. The legislators are utilizing a broad spectrum of mechanisms – including lowering objectives for risk control, as well as remediation and limiting the potential liability of parties (such as parties liable for contaminated agricultural sites) – in order to ease the burden on such parties. By implication, however, the Soil Pollution Law fails to meet its own objectives stated in Article 1, namely 'to protect and improve the environment … and to guarantee public health'. Unfortunately, it fails to adhere fully to the polluter-pays principle, as it is vague and self-contradictory.[69]

Court decisions

It should also be noted that the imposition of retroactive liability is being challenged in court. In the seminal case of *Friend of Nature, China Biodiversity and Green Development Foundation* v. *Changlong Agrochemical Co. Ltd and Changzhou Changyu Chemical Co. Ltd.*,[70] the defendant, Changlong Ltd, contended that, as a former state-owned enterprise, its remediation responsibilities should be borne by the government. The judge stated:

> Contamination of the site was the result of historical and cumulative pollution since the 1970s. However, producers on the site have encountered complicated enterprise reforms during that time, including ownership changes, corporate restructuring and a joint venture. Thus, division of liability amongst the defendants and historical producers before these reforms is unachievable.

The problem lies partly in the difficulty of identifying each producer's contributions to the contamination as a result of lapse of time. The court quoted Article 8 of the Opinion on Strengthening Prevention and Control of Land Contamination,[71] which states that if the parties who caused land contamination cannot be identified, found, or held accountable, the government should execute the remedial action. Since the government of Xinbei District of Changzhou City was remediating the contaminated land,[72] the court concluded that the plaintiffs' objective had already been realized, and therefore

[69] By way of a further example, empowering owners of usufructuary rights to pursue cost recovery from land contamination funds when polluters of sites contaminated before enactment of the Law cannot be identified is likely to result in onerous costs supported primarily by public finance, or in delayed remedial actions in light of severe local protectionism.

[70] Medium People's Court of Changzhou City, Su 04 Civil trial No. 214 (2016).

[71] No. 48 (2008), Ministry of Environmental Protection. At the time of the court decision, the national Soil Pollution Law was still at the proposal stage.

[72] China also introduced a land-banking mechanism in the 1990s, which requires the acquisition of land prior to storing, transferring, and constructing on land in urban areas. The land-use rights on

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dismissed the action. On appeal,[73] the court recognized retroactive liability for site remediation. Nevertheless, it held that the failure to require polluters to pay any costs substantially paralyzed efforts to attribute liability in a fair manner.[74]

5.3. *Further Improvements to the Imposition of Retroactive Land Contamination Liability in China*

Substantive justice will be hard to achieve without imposing retroactive liability on polluters, land users, and others. It will also require the careful design of mechanisms for the imposition of retroactive liability, which take account of the lack of foreseeability on the part of liable parties for their legal obligations.

The comparative study in Section 4 indicates that further improvements are needed to take into account the characteristics of China's legal system, such as a distinctive land-rights system, changing relationships between the state and enterprises in different phases of reform of state-owned enterprises, and numerous land transactions and substantial development as the result of economic transition and real estate development.

Firstly, the legal text should be worded more precisely and should express the legislature's intention because law is prospective unless it clearly states otherwise. In principle, a law is non-retroactive even if ambiguity exists. Imposing liability on those who acted before the enactment of a new law alters settled interests. A clear statement of the temporal effect of the law would help to create and build new patterns of interest in relation to land contamination remediation. As China is a continental law country, terminology such as 'retroactive' or 'retroactively applying' should be used to address temporal issues in regulations enacted by the ministries, or in judicial opinions enacted by the Supreme Court. Explicit confirmation of liability for actions that predate the enactment of the Law, regardless of when the land contamination occurred, would also need to be included.[75]

Secondly, as Article 45 of China's Soil Pollution Law provides only that 'owners of usufructuary rights will become responsible parties if polluters are unable to be identified', without clarifying whether the current or former owners are accountable, I propose that only the current owners of land usufructuary rights rather than the former owners should be held liable. In the comparative study in Section 4.2, it is found that pursuing the liability of current landowners does not contradict the non-retroactive principle for several reasons. Firstly, their liability originates from the social

contaminated sites with historical pollution may have already been withdrawn by the government for the purpose of public interest or redevelopment of old towns.

[73] *Friend of Nature, China Biodiversity and Green Development Foundation* v. *Changlong Agrochemical Co. Ltd and Changzhou Changyu Chemical Co. Ltd (Appeal)*, High People's Court of Jiangsu Province, Su Civil appeal No. 232 (2017).

[74] The court decision dodged the core question surrounding the retroactive liability of polluters: whether the polluters should be pursued for the site contamination costs spent by the government. The judge should have referred to Art. 46 of the PRC Soil Pollution Law. At that time, the Law had been enacted but had not come into effect on appeal. The judge pointed out that the government of Xinbei District, which had already conducted the remediation, could pursue cost recovery from the appellant if it so wished.

[75] Similar arguments have been made by defendants in land contamination litigation in China: see *Friend of Nature*, Medium Court, n. 70 above, and *Friend of Nature (Appeal)*, High People's Court, n. 73 above.

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responsibility of their land entitlement. Secondly, after paying for the risk management or remediation cost, they are also entitled to obtain recovery from either the polluters under Article 46,[76] or from provincial funds according to Article 71. Lastly, their responsibilities are legitimized by future benefits they might gain as a result of improved land quality. Overall, if the aim of risk control or remediation of land contamination could be appropriately achieved by incorporating the supplementary responsibility of current owners of land usufructuary rights, there is no need to treat former owners as responsible parties. After all, if defined as potentially responsible parties, it will be much harder for past landowners or managers to prove their innocence because of lapse of time and their lack of documents relating to production/pollution.[77] Also, a feature of the land contamination liability scheme in China is greater reliance on public finance,[78] thus the liability of past landowners becomes unnecessary.

Thirdly, as has been argued, imposing retroactive liability requires the protection of legitimate expectations. Delineating levels of liability based on different time periods is the most practical way for China to balance the public interest and legitimate expectations. The reason for this is that industrialization, land development, and environmental protection regulations in China all have temporal characteristics. Also, determining the balance between public interest and legitimate expectations on a case-by-case basis would be far too time-consuming and inject an unhelpful degree of complexity into decision making.

Thus, I propose that clear temporal phases should be delineated in the regulations, along with a set of suggested criteria that environmental protection agencies may use to determine the extent of retroactive liability, while still protecting legitimate expectations to some degree. To be specific, 1949 and 1979 could be two watershed years.

[76] In fact, Art. 46 only provides that response costs – including site investigation, risk assessment, risk control, remediation, outcome evaluation, and long-term stewardship – should be borne by parties liable for the land contamination, in other words, by those who caused the contamination. The legislation needs to further entitle the owner of usufructuary rights to pursue cost recovery from the polluters, even though they merely bear second-order responsibility. This is important because finding polluters liable could be much harder and more time-consuming than anticipated by the legislature.

[77] In 2010 the UK Secretary of State for Environment, Food and Rural Affairs decided two appeals under the contaminated land provisions in Part 2A of the Environmental Protection Act 1990. The appeals were made by Redland Minerals Ltd (Redland) and Crest Nicholson Residential Plc (Crest) against a remediation notice served on them by the Environment Agency (EA). The case concerned a site at Sandridge, Hertfordshire (the Site). From 1955 to 1980 the Site was used as a chemical factory producing bromate and bromide. While the factory was in operation, bromate and bromide entered the soil and gradually made their way into the underlying chalk aquifer. Crest purchased the Site from Redland in 1983. At the time Crest knew a certain amount about the bromide contamination problem in the soil (but not the underlying aquifer), and nothing about the contamination issues relating to bromate. By 1987 Crest had developed the Site and sold 66 houses. Redland subsequently purchased the interests of the companies that had run the chemical works and took on their liabilities. On 11 Nov. 2005 the EA served a remediation notice (the Notice) on Redland and Crest, identifying them both as the Class A appropriate persons for the pollutant linkages and therefore liable for remediation actions at the Site. Essentially, the Secretary of State decided that Crest and Redland had been properly identified as Class A appropriate persons on the basis that they had 'caused' the pollution. The remediation actions were appropriate in the main and the approach taken by the EA in applying the liability rules was sensible.

[78] E.g., Art. 68 of the PRC Soil Pollution Law provides that local government should implement risk control and remediation of contaminated lands when the polluter of the land acquired from the market is the former owner of the usufructuary land. This provision widens the responsibility of government – that is, the cost of public finance.

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Before the foundation of the PRC in 1949, land contamination was rare and not legally culpable because environmental regulation had not emerged globally. Between 1949 and 1979, polluters should bear only limited liability, as the state was the sole owner of industrial plants and land at the time.[79] Environmental laws and regulations were still lacking during that period.

The year 1979 is the key starting point for China's reform of state-owned enterprises, property rights, and environmental regulations, all in an attempt to 'open up' its economy. In that year, the Interim Law on Environmental Protection of the PRC entered into force. This clearly provided that 'pollution and other damage to the environment should be prevented during location selection, design, construction and production activities of enterprises and other entities'. Therefore, it is my argument that for any polluting activities after 1979 which caused land contamination the responsible parties should bear full liability.

Fourthly, with regard to interactions between retroactivity and standards of liability, it should be recalled that both fault-based liability standards and the application of a strict liability standard on a case-by-case basis are options that build connections between retroactive liability and the standard of liability. Imposing strict liability standards is justified in order to redistribute the unfortunate consequences of activities that endanger the environment and people. This approach eliminates the need to rebuild the link between culpable conduct and results in cases where evidence has become scarce because of lapse of time.

The combination of retroactive liability with a strict liability standard excludes the significance of fault in holding persons liable, while the combination of retroactive liability and fault-based liability admits the significance of fault in determining liability. My suggestion is that China should adopt a combination of retroactive and strict liability for those who caused the pollution. Years may have passed when a contaminated site is finally located. At this point, determining the fault of polluters is almost unachievable because of the accumulation of contaminants, loss of documents, and so on.[80]

6. CONCLUDING REMARKS

The various retroactive liability schemes in the jurisdictions investigated in this article reveal two critical elements in land contamination liability schemes. Firstly, applying new law retroactively is unavoidable if the desire is to make responsible parties pay

[79] Throughout a long period in history, the state, in conjunction with government at different levels, was the real controller of enterprises. The relationship between the government and enterprises under the traditional economic system was hierarchical and subordinate – the public-owned economy accounted for over 97% of the whole. As the state was the sole owner of enterprises, enterprises were adjunct to government as their operation and production activities were arranged according to administrative authority orders without any independent decision-making rights. The state and government comprehensively managed the planning, investment, finance, supply, and labour wages of the enterprises. Government bore unlimited responsibility for enterprise and gained almost all the residual profits, while enterprises could neither control and dispose of their assets independently nor gain the return on assets.

[80] H. Wang, 'Cleaning Up Contaminated Sites in Urban China: Who Should Be Liable?', in H. Ginzky et al. (eds), *International Yearbook of Soil Law and Policy* (Springer, 2018), pp. 167–88, at 183.

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for the cost of removal and remediation. Secondly, buffer mechanisms are incorporated to ease the harshness of these retroactive laws, to protect legitimate expectations, to eliminate the distaste for retroactive laws, and to find some semblance of balance between protecting human health and the environment and land use.

With this comparative analysis in mind, the examination of China's new national land contamination law reveals that the issue of retroactive application has been inappropriately overlooked. This has resulted in loopholes that might be exploited to avoid liability and in legal challenges. In order to improve the law, this article makes several suggestions for China's future legislative endeavours. These include (i) clarifying the legal text; (ii) distinguishing between retroactive liability of polluters, non-retroactive liability of current owners of usufructuary rights as well as retroactive liability of former owners; (iii) delineating between different levels of liability according to the time period, as well as (iv) combining retroactive liability with strict liability.

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