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II.9 Federalism, delegated permitting and enforcement

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Abstract
A common policy question confronting federal systems is how best to apportion environmental regulatory authority between the federal government and states. Whilst that power could theoretically be committed exclusively to one level of government, a common approach is a system of shared regulatory authority, often referred to as cooperative federalism. That term can apply to a wide variety of arrangements. One example would be a predominantly state-based system in which federal authority is limited to narrowly delineated areas, providing technical or financial support, or publishing non-binding guidelines to encourage harmonization. Another 'classical' form would encompass centrally enacted or promulgated standards, with permitting and enforcement left entirely to state authority. A more dynamic approach recognizes the strengths in a system in which authority is more closely intertwined and overlapping rather than kept within largely separate spheres.

This chapter compares federal systems utilizing approaches that span the spectrum from classical to more dynamic, with a focus on regulation of water pollution as the organizing mechanism for exploring different forms of cooperative federalism.

Keywords
Federalism, cooperative federalism, dynamic federalism, race to the bottom, water pollution, standard setting, discharge limits, permitting, enforcement, citizen suits, Australia, Germany, European Union, United States

Contents

II.9.1 Introduction

The chapter begins with a brief overview of the academic debate over the optimal allocation of regulatory authority between central governments and state or regional authorities. Scholars belonging to the classical school of thought tend to believe that an optimal regulatory jurisdiction exists for each kind of environmental problem. The dynamic school of thought, on the other hand, embraces overlap, dialogue and redun-

dancy as a model for environmental regulation. The chapter will then examine how three different federal systems allocate regulatory authority responsibilities for water pollution control. Those three systems run the gamut from a classical arrangement in Australia, where state governments possess primary responsibility for standard setting, permitting and enforcement, to Germany, where authority for standard setting is centralized but permitting and enforcement is state-based, to the United States, where a more dynamic system is at play with federal standards creating regulatory floors, federal oversight of delegated state-permitting programmes and redundant enforcement authority.

II.9.2 Federalism

Federalism refers to the institutional arrangement of political and administrative authority in a country in which both the federal government and state governments have separate or shared authority to make and implement law.[1] Forty per cent of the world's population lives in 25 countries that either have or claim to have federal systems.[2] A question common to functioning federal systems is how to allocate regulatory and enforcement power between the federal and state governments.

Many scholars believe that one level of government or the other is normatively better for dealing with a particular regulatory problem. While there is general agreement that pollution crossing state boundaries is best addressed by federal authority, since states have little incentive to deal effectively with spillover effects, no agreement exists for purely intrastate environmental problems.[3] Many contend that federal regulation is appropriate for such problems if state action is likely to be lax due to the influence that industry often wields in state capitals or due to economic competition among the states (the so-called 'race to the bottom').[4] Others cite the economies of scale that federal governments enjoy in producing and analysing complex scientific and technical data,[5] as well as the historical record that demonstrates the general failure of state governments to adequately address pollution.[6] Other scholars argue that a race to the bottom in environmental standards would not necessarily harm overall social welfare[7] and offer a revisionist account concerning the history of state environmental regulation.[8] A few academics present a variation on the same theme. Daniel Esty, for instance, asserts that whilst an optimal jurisdiction exists for regulating particular environmental problems, or different aspects of a problem, deciding which is appropriate depends upon the specific contours of each problem.[9]

A newer school of thought rejects the enterprise of trying to identify which level of authority should be paramount for each environmental problem. Instead, it touts the

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1 Robertson (2012) 2.
2 Watts (2008) 4–5.
3 Adelman and Engel (2009) 280.
4 Stewart (1977) 1210.
5 Glicksman (2011) 86.
6 Andreen (2012).
7 Revesz (1992) 1227–8.
8 Adler (2005) 465–6.
9 Esty (1996) 652.

benefits of overlapping authority between state and federal governments.[10] These scholars believe that a dynamic form of federalism advances the value of dialogue among the regulators at the state and federal level[11] and that the resulting interaction creates an environment that is more conducive to policy innovation.[12] Dynamic federalism also facilitates redundancy. If one level of government fails to address a problem, or fails to enforce against a particular violation, another level can act.[13] In this way, regulatory overlap can provide a counterweight to interest group capture or bureaucratic lethargy in one capital city or the other. Under this approach, 'the key task of federalism is to manage the overlap of state and federal law'.[14] Despite its many benefits, dynamic federalism can produce tension between federal and state regulators and appears inefficient in terms of classical economic theory.

The shape and structure of cooperative federal systems have been influenced by many of these factors, including concern about the impact of a race to the bottom and the actual history of state regulation. Other factors, however, have also given shape to these systems, including governmental traditions, constitutional design and other country-specific conditions, including geography.[15]

II.9.3 Permitting and enforcement: surveying the regulatory landscape

II.9.3.1 Australia

As in most, if not all, federal systems, the Australian Constitution sets forth the powers that are possessed by the Commonwealth (federal) government. Whilst the heads of federal authority are more expansive in many ways than those found in the United States Constitution, there is no explicit grant of power to the Commonwealth government to enact environmental legislation.[16] The Commonwealth, however, has used various heads of power to regulate activities in specific subject areas such as World Heritage sites, Ramsar Wetlands, listed threatened species, and federal marine areas.[17] Commonwealth regulatory action, however, has not extended beyond this relatively limited focus on wildlife and wilderness areas to include pollution control. Nevertheless, the Commonwealth provides financial assistance to the states for specific environmental and natural resource projects.[18]

The six states and two self-governing territories regulate the vast majority of polluting activities, including water pollution.[19] This is probably not surprising given that the largest cities in Australia are located on the coast, far removed from other states, and since there is but one major interstate river system in the country, the Murray-Darling. At the

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10 Adelman and Engel (2009) 282.
11 Shapiro (2005) 288.
12 Buzbee (2005) 115–16.
13 Shapiro (2009) 44.
14 ibid 42.
15 See Sawer (1969) 122.
16 See Bates (2013) 131.
17 Environment Protection and Biodiversity Conservation Act 1999 (Cth). The Commonwealth has also been responsible for the Australian response, as variable as it has been, to climate change.
18 Bates (2013) 145–6.
19 Abbot (2009) 65; McGrath (2014) 164–5.

state and territory level, permits or consents to discharge water pollutants are issued on a case-by-case basis by state, and territory environmental agencies. These permits are often issued during the planning process for a new development, and it is relatively common for permit conditions to be negotiated with the regulated entity.[20] The discharge limits found in Australian water pollution permits reflect, or should reflect, as a matter of law or policy, a concept known as best practice environmental management.[21] These best practices, however, are not promulgated as uniform, technology-based discharge limits for particular industrial sectors as they are in the United States. Instead, the adoption of best practices for an industry or industrial category is subject to negotiation between the agencies and industry.[22] To inform this process, reference can be made to internationally recognized standards, existing industry guidelines or, in the case of sewage, non-binding national guidelines that apply to direct discharges and the introduction of industrial waste into a sewer system.[23]

More restrictive discharge limits may be set if necessary to protect ambient water quality.[24] It is the responsibility of state or territory authorities, local jurisdictions and local stakeholders to agree on the water quality objectives (including uses such as aquatic ecosystem, drinking water or irrigation) that will apply to a particular water body.[25] Whilst it appears that Australian regulators do not set precise water quality criteria to protect these objectives (uses), there are general, non-binding national guidelines pertaining to particular pollutants and environmental flows that can help guide regulators in deciding whether and, if so, how to set more restrictive discharge limits to meet water quality objectives.[26] In addition to discharge limits, water pollution permits generally contain monitoring and reporting requirements.[27]

As with permitting, enforcement takes place exclusively at the state and territory level. State and territory regulators in Australia have historically tried to persuade and work with violators rather than resort to formal enforcement actions.[28] This cooperative approach continues today; however, the pollution control agencies are a bit more aggressive in New South Wales and Victoria than in other Australian jurisdictions.[29] There are a number of reasons why enforcement is milder in Australia than in the United States. A more cooperative approach to enforcement is consistent with the model that prevails

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20 OECD (2007) 177.

21 See Bates (2013) 614–15.

22 ibid 615.

23 See National Water Quality Management Strategy, Australian Guidelines for Sewerage Systems: Effluent Management (1997); National Water Quality Management Strategy, Guidelines for Sewerage Systems: Acceptance of Trade Waste (1994). The National Water Quality Management Strategy is a joint enterprise aimed at improving water quality in Australian and New Zealand waters. It has been developed by the Australian and New Zealand governments in cooperation with state and territory governments.

24 Bates (2013) 629.

25 See National Water Quality Management Strategy, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2000).

26 ibid.

27 Bates (2013) 635.

28 Grabosky and Braithwaite (1986).

29 Abbot (2009) 92–3.

in Britain, the model on which Australian administration is based. It is also a product of the limited resources that hamstring most state and territory environmental agencies and perhaps a lack of political will in some instances. Another reason lies in the fact that the range of enforcement tools available in Australia is more limited than in the United States.[30] States can employ education, warnings, administrative orders and low-level penalty notices[31] for more minor violations, pursue civil suits for injunctive relief (although that is rarely done) and bring criminal prosecutions for the most egregious violations.[32] However, they lack two intermediate enforcement tools: administrative penalty authority of a substantial nature, and the power to seek civil penalties in court.[33] As a result, they are much more likely to use informal cooperative techniques such as compliance assistance and warning letters, or administrative orders rather than resort to criminal prosecution or an incomplete civil remedy.[34]

As a general matter, private citizens have not been empowered to file suit to enforce water pollution control laws in Australia.[35] In New South Wales, however, citizens have been granted standing, without a showing of individualized harm, to bring a case in the Land and Environment Court to enjoin violations of a number of environmental statutes including the primary statute relating to water pollution.[36] Whilst the grant of standing to all persons in New South Wales to enforce the law is an enormous step forward, the actual filing of citizen suits has been limited by two factors. First, unmeritorious plaintiffs may have to pay the costs incurred by the defendant, although some Australian courts have exercised their discretion not to award costs if the case can be categorized as 'public interest' litigation.[37] Second, the statute authorizing these citizen suits appears to limit such a case to a violation that 'is causing or is likely to cause harm to the environment'.[38] Rather than merely demonstrating that a permit was violated, a citizen plaintiff thus may also have to show that the violation produced some environmental harm, which, for many violations, would present significant evidentiary difficulties unless a court was disposed to presume the existence of harm flowing from a permit violation. The New South Wales citizen suit provision is also a rather constrained enforcement tool insofar as it can only be used to obtain injunctive relief. Unlike federal law in the United States, civil penalties are not available.

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30 Murchison (1995) 538–9.

31 For example, Infringements Act 2006 (Vic) (Aust); Protection of the Environment Operations (General) Regulation 2009 (NSW) (Aust).

32 See Abbot (2009) 92–100, 223–4. Maximum possible penalty amounts have, in some instances, been increased in recent years, and the range of available enforcement tools has occasionally been expanded. See OECD (2007) 182.

33 Bates (2013) 772–6, 833–4; Abbot (2009) 101.

34 See Abbot (2009) 101.

35 Whilst it is rarely done, third parties may be given leave by a state attorney general to enforce state law. See Bates (2013) 765.

36 Protection of the Environment Operations Act 1997, s 253 (NSW) (Aust); Land and Environment Court Act 1979, s 20 (NSW) (Aust).

37 See Bates (2013) 854–61.

38 Protection of the Environment Operations Act 1997, s 253 (NSW) (Aust).

II.9.3.2 Germany

The German Constitution (the *Grundgesetz* or Basic Law) lists the competences of both the federal government and the 16 states or *Länder*. As a result of a constitutional change in 2006, water pollution control is subject to concurrent legislation by both the federal government and the states.[39] Although water pollution statutes exist at both levels of government, the federal government has been responsible for setting discharge standards for particular industries, whilst the states are responsible for virtually all day-to-day administration including permitting and enforcement.[40]

The discharge standards set by the Federal Ministry of the Environment pursuant to the Federal Water Act[41] are similar to federal effluent limitations in the United States, although they are not as detailed.[42] The standards are arrived at by a process of negotiation with industry and academic experts. Environmental groups and citizens are not involved. Once an agreement has been reached, the discharge limits are promulgated as binding regulations that will be applied by the environmental agencies at the state or local level.[43] Another federal law, the Waste Water Charge Act, requires dischargers to also pay a fee depending upon the magnitude of the discharge and the concentration of certain pollutants.[44] The intent of the Act is to create an incentive to discharge less than would otherwise be allowed. The scheme, however, has not worked as well as its drafters envisioned.[45]

Water pollution permits are issued at the state or local level. The permit writers must include the federal requirements relating to effluent limitations and discharge fees, plus state requirements, if any. German law has not, historically speaking, provided for water quality standards, although on rare occasions permit conditions have been tightened beyond the regulatory limit where a discharge posed some substantial risk to health or the environment.[46] Permits are issued for an indefinite period of time or for periods of up to 30 years, although shorter periods are sometimes established.[47] Perhaps recognizing the problem created by such long-lived permits, German law gives the environmental agencies discretion to revise permits when necessary to take into account new developments such as changes to the federal effluent limitations.[48] The federal government has never questioned the content of a state or locally issued water discharge permit.[49] In addition, the federal government has no financial leverage over

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[39] *Gesetz zur Änderung des Grundgesetzes* [Law Amending Basic Law], 28 August 2006, BGB1, I at 1110 (Ger).

[40] Kelemen (2004) 88.

[41] Wasserhaushaltsgesetz, 27 July 1957, BGB1, I at 1110 (Ger).

[42] Abwasserverordnung (Waste Water Ordinance), 17 June 2004, BGB1, I at 1108 (Ger).

[43] Williamson and Böhm (2013) 10249.

[44] Abwasserabgabengesetz, 13 September 1976, BGB1, I at 272.

[45] Williamson and Böhm (2013) 10246.

[46] ibid 10248.

[47] ibid 10246. Those industries that discharge to a public wastewater treatment system, rather than directly to a receiving water, must comply with whatever requirements are necessary to ensure that the public system meets its permit conditions; ibid 10245–6.

[48] See ibid.

[49] Kelemen (2004) 95.

state or local programmes since the Basic Law forbids the federal government from conditioning grants made to them.[50]

Compliance monitoring as well as enforcement of both federal and state law are performed by state and local agencies.[51] Cooperative forms of enforcement—phone calls or warnings—seem to be preferred. For more serious infractions, compliance orders may be issued or administrative penalties levied although the penalty amounts are typically not very large.[52] While civil cases seeking penalties do not appear to be available, criminal sanctions are, although they are not often sought. Corporations, however, cannot be criminally prosecuted in Germany. Responsible corporate officials, on the other hand, may be prosecuted, but actual environmental harm must normally be proven. As a general rule, only small violations such as dumping used motor oil in a stream are prosecuted.[53]

The implementation capacity of the various states differs widely, as does the quality of enforcement.[54] While the federal government can bring informal pressure to bear on states that are lagging in terms of implementation and enforcement,[55] deficiencies in both areas remain.[56] One primary reason for these problems lies in the fact that state and local governments in Germany often face difficult fiscal and resource constraints.[57]

Today, the German federal system operates within a larger federal system, the European Union (EU). Since 2000, a number of EU directives and regulations have imposed increasingly significant regulatory requirements upon German water pollution law. The constitutional change in 2006, in fact, was designed to accelerate the implementation of these EU requirements. However, the split in German regulatory authority between centralized policy-making and state-level implementation has made compliance with EU mandates a challenging exercise that has sparked some degree of tension between the federal government and the states.[58]

Earlier EU directives posed no real difficulty for German compliance. For example, the 1991 Urban Waste Water Directive merely required the application of secondary treatment for discharges from sewage collection systems.[59] The Water Framework Directive of 2000 (WFD)[60] in some respects did not require tremendous change either. For instance, it required the setting of effluent limitations by its Member States based on best available techniques (BAT) for point source discharges.[61] However, the WFD went further and required the establishment of a water quality standards programme.

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50 ibid 96.
51 See ibid 95–6.
52 Williamson and Böhm (2013) 10251.
53 ibid 10250–51.
54 OECD (2012) 36–7.
55 Kelemen (2004) 96.
56 OECD (2012) 37.
57 ibid 36–7.
58 ibid.
59 Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment [1991] OJ L135/40.
60 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [2000] OJ L327/1.
61 ibid art 10(2).

Under this programme, Member States are directed to protect and restore all surface waters to good water quality condition (both chemically and ecologically) within 15 years, except for artificial and heavily modified waters, where the goal is merely the achievement of good ecological potential.[62] Moreover, the WFD stipulates that where a water quality standard or objective requires a more stringent discharge limit for a facility than otherwise required by effluent limitations, the Member States must set the more stringent limit.[63] In the United States, water quality standards have been part of the water pollution programme since 1965, and since 1977 permit limits more stringent than those otherwise required by the uniform technology-based effluent regulations must be imposed if necessary to meet water quality standards. However, the WFD created a first for the German regulatory system. Compliance will be a challenge since there are some watersheds in northern Germany where the reported status or potential of over 90 per cent of the water bodies is less than good.[64] Also challenging will be the requirement of ensuring an adequate ecological flow on German rivers in order to meet the objective of good ecological status.[65]

In 2010 the EU also tightened up its regulatory approach for industrial wastewater discharges. Frustrated that too many permits issued by Member States did not contain limits in line with BAT, the Directive on Industrial Emissions[66] created a process through which the European Commission can issue binding decisions (and binding conclusions prior to the completion of the regulatory process) setting more precise emission limitations that are consistent with BAT.[67] Permits must provide for monitoring and reporting, and may also contain conditions that are stricter than BAT[68] and must do so if dictated by water quality considerations.[69]

II.9.3.3 The United States

The Clean Water Act 1972[70] represented a fundamental shift in the approach to water pollution control in the United States. Prior to its enactment, the 50 states were primarily responsible for regulating water pollution, although the federal government had long assisted state efforts by providing both technical and financial support.[71] Convinced, however, that water pollution was a national problem, Congress in 1965 called upon the states to establish and implement a water quality standards programme for their interstate waters.[72] Whilst some states made progress, this limited approach largely failed. By

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62 ibid art 4(1)(a).
63 ibid art 10(3).
64 *Commission Report on the Implementation of the Water Framework Directive* at 20, COM (2012) 670 final (14 November 2012).
65 See ibid 9.
66 Directive 2010/75 of the European Parliament and of the Council of 24 November 2010 on Industrial Emissions (Integrated Pollution Prevention and Control) (Recast), 2010 (EC).
67 ibid arts 13(5), (7), 14(3).
68 ibid art 14(1), (4).
69 ibid art 18.
70 Clean Water Act of 1972, Pub L No 92-500, 86 Stat 816 (codified as amended at 33 USC §§ 1251–1376 (2006)).
71 See Andreen (2003) 235–52.
72 See ibid 244–50, 252–5.

the end of the 1960s, 70 per cent of industrial discharges remained untreated, discharges from municipal sewer systems were growing larger, and fish kills reached new highs.[73]

Congress as well as the public grew frustrated with this state of affairs and, in 1972, Congress fixed upon a new more dynamic approach. Predicated on Congress' constitutional authority to regulate interstate commerce, the Clean Water Act made the federal government the dominant force in water pollution control.[74] The Act calls upon the US Environmental Protection Agency (EPA) to promulgate uniform, technology-based effluent limitations for application to point source dischargers in dozens of industrial categories and hundreds of subcategories. These limitations are generally based upon specific kinds of pollution control technology for particular waste streams or facilities: best conventional treatment for conventional pollutants; BAT for toxics; and BAT-demonstrated for new plants. In the case of sewage treatment plants, secondary treatment was required.[75]

The water quality standards programme, moreover, was retained and strengthened to ensure that water quality objectives were met, notwithstanding the number of dischargers to a particular stream or the volume of its flow. To do so, the states were directed, subject to federal approval, to designate their waters for specific uses and then set technical criteria to meet those uses. For streams unable to meet water quality standards after the application of the technology-based limits, the states are required to set total maximum daily loads and allocate those loadings to the polluters located along that stream.[76]

The uniform, technology-based effluent limitations as well as any more stringent limitations necessary to meet water quality standards are applied to point source discharges through a permit system. Permits are issued for a maximum of five years. Whilst the federal EPA issued many of the permits during the 1970s, the vast majority of states have now been approved by EPA to administer permit programmes in lieu of federal administration. The states, however, must comply with federal requirements, and EPA is empowered to veto any state permit that fails to do so, although the states are free to set more stringent standards.[77] A number of states have taken advantage, at least occasionally, of the power that this gives them and have forged ahead with tougher requirements and innovative approaches to pollution control.

The permit system facilitates enforcement by defining the specific obligations of each individual discharger. In addition to discharge limitations, the permits contain monitoring and reporting requirements, and each discharger must file a periodic report that sets forth the actual levels of pollutants discharged.[78] This attention to enforceability was no accident. Congress clearly understood that effective enforcement was the key to the ultimate success of the complex regulatory scheme created by the Clean Water Act.[79]

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73 Andreen (2013) 25.
74 ibid 25–6.
75 Andreen (2004) 548.
76 ibid 548–9.
77 See ibid 549.
78 Andreen (1987) 217.
79 See ibid 222–42.

The concern with enforcement also prompted Congress to create a wide array of sanctions for violations of the Act. Thus, the Act today provides EPA with authority to enforce the Act through the use of administrative compliance orders, substantial administrative penalties, civil suits for both injunctive relief and civil penalties, and criminal sanctions (fines and imprisonment). The Act adds a second governmental layer to the enforcement mix as well. States, like EPA, may enforce state-issued permits.[80] Congress, however, was still not content. Beyond the redundancy provided by two layers of government enforcement, there is a third—citizens acting as private attorneys general may sue for both injunctive relief and penalties payable to the US Treasury in the event a permit is violated, or an unpermitted discharge occurs.[81] In this way, Congress reduced the likelihood of 'regulatory underkill', the failure to adequately enforce a regulatory scheme.[82]

Despite the redundancy built into the Act, enforcement remains a constant challenge. Federal enforcement has faltered on at least three occasions,[83] and state enforcement efforts failed to pick up the slack during those periods of reduced federal activity.[84] Fortunately, citizen suits were available to help fill the gap; unfortunately, however, the federal courts have placed a number of obstacles in the path of those actions. Nevertheless, citizen enforcement remains an important and indispensable ingredient in the arsenal protecting the integrity of the Clean Water Act.[85]

Notwithstanding the inevitable tension that sometimes arises between EPA and some of the states, the Act has proven remarkably successful. Industrial and municipal discharges have declined dramatically, and water quality has improved broadly across the entire nation.[86] The Act, however, is ageing, and 25 years have passed since it was last amended in comprehensive fashion, leaving more than a little fine-tuning to be performed.[87] Ironically, perhaps, the two most significant remaining problems lie in two areas that the Act left primarily in state hands: the control of nonpoint source or diffuse water pollution, and the establishment of environmental flows that mimic the hydrological cycle.[88]

II.9.4 Conclusions

The Australian approach to environmental regulation is the closest among the systems we have explored to a classic form of cooperative federalism. Whilst the Commonwealth has utilized its power to regulate in a number of narrow areas, water pollution control has been left primarily to the states. The German approach occupies a middle ground between the Australian system and the American, with the federal government setting effluent limitations for particular industries (in some cases now at the direction of the European Commission) but with permit issuance and enforcement left entirely in state

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80 Andreen (2004) 549–50.
81 ibid 550.
82 Buzbee (2005) 108.
83 Andreen (2007) 71–4.
84 ibid 74–5.
85 ibid 75–6.
86 Andreen (2013) 26.
87 Andreen and Jones (2008); Andreen (2013).
88 Andreen (2015).

hands. The design for water pollution control in the United States is more dynamic. Uniform effluent limitations are promulgated at the federal level through an open and transparent rule-making process, and implemented through permits that are issued in most cases by states, subject to federal oversight. More stringent permit conditions will be set if needed to meet water quality criteria, established by states and approved by the federal government. States, moreover, are free to impose conditions and standards that are more protective of the environment than the federal government would require. In the United States, enforcement is also a shared function with states and the federal government having concurrent powers. And to ensure that enforcement can be pursued even in instances where both levels of government fail to act, whether for lack of resources or will, citizens are empowered to fill the void as private attorneys general. These examples illustrate the possibilities and challenges in designing a cooperative federalism model for a specific area of environmental regulation. Standard-setting and enforcement at the state level can suffer from resource and capacity constraints, lack of transparency or uniformity, inadequate political will, or insufficient options for administrative and civil enforcement. Whilst the overlapping and redundant nature of a dynamic system may appear inefficient from the perspective of classical economic thought, and may well produce occasional tension between the various governments involved, in the case of the US Clean Water Act, the results have been impressive. The approach has produced substantial progress in precisely the areas where the federal government's role is most expansive and the overlap in function is greatest.

Bibliography

Abbot C, *Enforcing Pollution Control Regulation: Strengthening Sanctions and Improving Deterrence* (Hart Publishing 2009).

Adelman DE and Engel KH, 'Adaptive Environmental Federalism' in William W Buzbee (ed), *Preemption Choice: The Theory, Law, and Reality of Federalism's Core Question* (CUP 2009).

Adler JH, 'Judicial Federalism and the Future of Federal Environmental Regulation' (2005) 90 *Iowa L Rev* 377.

Andreen WL, 'Beyond Words of Exhortation: The Congressional Prescription for Vigorous Federal Enforcement of the Clean Water Act' (1987) 55 *George Washington L Rev* 202.

Andreen WL, 'The Evolution of Water Pollution Control in the United States: State, Local and Federal Efforts, 1789–1972: Part II' (2003) 22 *Stanford Envtl LJ* 215.

Andreen WL, 'Water Quality Today—Has the Clean Water Act Been a Success?' (2004) 55 *Alabama L Rev* 537.

Andreen WL, 'Motivating Enforcement: Institutional Culture and the Clean Water Act' (2007) 24 *Pace Envtl L Rev* 67.

Andreen WL, 'Of Fables and Federalism: A Re-Examination of the Historical Rationale for Federal Environmental Regulation' (2012) 42 *Envtl L* 627.

Andreen WL, 'Success and Backlash: The Remarkable Continuing Story of the Clean Water Act' (2013) 4 *George Washington J Energy and Envtl L* 25.

Andreen WL, 'Dynamic Federalism and the Clean Water Act: Completing the Task' in Erin Ryan and Kalyani Robbins (eds), *The Law and Policy of Environmental Federalism: A Comparative Analysis* (Edward Elgar 2015).

Andreen WL and Jones S, *The Clean Water Act: A Blueprint for Reform* (Center for Progressive Reform 2008).

Bates G, *Environmental Law in Australia* (8th edn, LexisNexis Butterworths 2013).

Buzbee W, 'Contextual Environmental Federalism' (2005) 14 *NYU Envtl LJ* 108.

Buzbee W, 'Federal Floors, Ceilings, and the Benefits of Federalism's Institutional Diversity' in William W Buzbee (ed), *Preemption Choice: The Theory, Law, and Reality of Federalism's Core Question* (CUP 2009).

Chemerinsky E, 'Empowering States: The Need to Limit Federal Preemption' (2006) 33 *Pepperdine L Rev* 1.

Engel KH, 'Who's Afraid of Overlapping State and Federal Jurisdiction? Harnessing the Benefits of Dynamic Federalism in Environmental Law' (2006) 56 *Emory LJ* 159.

Engel KH and Saleska SR, 'Subglobal Regulation of the Global Commons: The Case of Climate Change' (2005) 32 *Ecology LQ* 183.

Esty DC, 'Revitalizing Environmental Federalism' (1996) 95 *Michigan L Rev* 570.
Glicksman RL, Markell DL, Buzbee WW, Mandelker DR and Bodansky D, *Environmental Protection: Law and Policy* (6th edn, Wolters Kluwer 2011).
Grabosky P and Braithwaite J, *Of Manners Gentle: Enforcement Strategies of Australian Business Regulatory Agencies* (OUP 1986).
Howarth W, 'Water Quality and Land Use Regulation under the Water Framework Directive' (2006) 23 *Pace Envtl L Rev* 351.
Kelemen DR, *The Rules of Federalism: Institutions and Regulatory Politics in the EU and Beyond* (Harvard University Press 2004).
McGrath C, 'One Stop Shop for Environmental Approvals a Messy Backward Step for Australia' (2014) 31 *Envtl and Planning LJ* 164.
Murchison KM, 'Environmental Law in Australia and the United States: A Comparative Overview' (1995) 22 *Boston College Envtl Aff L Rev* 503.
OECD (Organisation for Economic Co-operation and Development), *OECD Environmental Performance Review: Australia* (OECD Publishing 2007).
OECD (Organisation for Economic Co-operation and Development), *OECD Environmental Performance Reviews: Germany* (OECD Publishing 2012).
Revesz R, 'Rehabilitating Interstate Competition: Rethinking the "Race to the Bottom" Rationale for Federal Environmental Regulation' (1992) 67 *NYU L Rev* 1210.
Robertson DB, *Federalism and the Making of America* (Routledge 2012).
Sawer G, *Modern Federalism* (CA Watts and Co 1969).
Shapiro RA, 'Toward a Theory of Interactive Federalism' (2005) 91 *Iowa L Rev* 243.
Shapiro RA, 'From Dualism to Polyphony' in William W Buzbee (ed), *Preemption Choice: The Theory, Law, and Reality of Federalism's Core Question* (CUP 2009).
Stewart RB, 'Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy' (1977) 86 *Yale LJ* 1210.
Watts RL, *Comparing Federal Systems* (3rd edn, McGill–Queen's University Press 2008).
Williamson RL and Böhm M, 'Dirty Water: Lessons for Comparative Public Law and International Governance from Wastewater Regulation in the United States and Germany' (2013) 43 *Envtl L Rep (News and Analysis)* 10237.