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Approaches to Integrated Pollution Control in the United States and the European Union

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I. INTRODUCTION

Many still unsolved national and global environmental problems have called into question the control capability of law.[1] Particularly in the field of environmental law, innovative concepts and ideas are being discussed to resolve complex environmental issues.[2] One of the concepts

1. *See generally* GOVERNING COUNCIL OF THE UNITED NATIONS ENVIRONMENT PROGRAMME—GLOBAL MINISTERIAL ENVIRONMENT FORUM, MALMÖ MINISTERIAL DECLARATION (2000), *available at* http://www.unep.org/malmo_ministerial.htm (expressing deep concerns that the environment and the natural resources that support life on earth are deteriorating at an alarming rate); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), SUMMARY FOR POLICYMAKERS CLIMATE CHANGE 2001: IMPACTS, ADAPTATION, AND VULNERABILITY 9-13 (2001) (predicting an increase in surface temperature of between 1.4°C and 5.8°C by 2100 due to global warming); UNITED NATIONS ENVIRONMENTAL PROGRAMME (UNEP), GLOBAL ENVIRONMENT OUTLOOK 2000, at 23 (1999) [hereinafter UNEP GLOBAL ENV'T OUTLOOK 2000] (providing the latest compelling global and regional assessment of the serious nature of the environmental threats).

2. From the various emerging ideas the most prominent are: Edith Brown Weiss, *Our Right and Obligation to Future Generations for the Environment*, 84 AM. J. INT'L L. 198 (1990) (arguing for the concept of intergenerational equity); John J. Costonis, *The Chicago Plan: Incentive Zoning and the Preservation of Urban Landmarks*, 85 HARV. L. REV. 574 (1972) (discussing transferable development rights); Joseph Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1972) (introducing the public trust doctrine); Christopher D. Stone, *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972) (suggesting that nature or natural objects should be regarded as subjects of legal rights); UNITED NATIONS WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE 8 (1987) (introducing the concept of sustainable development).

which has entered the debate is integrated pollution control.[3] The adoption of the concept can be observed throughout the world.[4] The European Union has adopted it as an important element of its environmental policy in its Third Environmental Action Programme of 1983.[5] Notions of integration have been part of the United States' environmental agenda from its earliest stages. Arguably, the Environmental Protection Agency (EPA) was created for the purpose of integrating pollution control regimes. At the founding of the Agency, President Nixon declared that "for pollution control purposes the environment must be perceived as a single, interrelated system."[6] Thirty years have passed. The United States has enacted numerous major environmental statutes, and the EPA has launched many environmental programs. To what extent has the United States achieved the goal of integration?

This Article examines the similarities and differences of integration efforts of the United States and the European Union, focusing primarily on pollution control and industrial permitting. Part II seeks to define the phrase "integrated pollution control" and explains the goals behind the concept. Part III examines integration efforts in the United States at both the federal and state levels. Part IV outlines the development of

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3. Integrated pollution control started receiving considerable attention on the international level in the 1990s. *See* Barry G. Rabe & Janet B. Zimmerman, *Cross-Media Environmental Integration in the Great Lake Basin*, 22 ENVTL. L. 253 (1991) (examining integrated approaches between Canada and the United States to manage the Great Lake Basin); Philippe Sands, *The "Greening" of International Law: Emerging Principles and Rules*, 1 IND. J. GLOBAL LEGAL STUD. 293, 302-07 (1994) (discussing the concept of integrated pollution control as a new regulatory approach); Harald Hohmann, *Cross Media Pollution and International Environmental Law*, 34 NAT. RES. J. 535, 540-59 (1994) (commenting on the adoption of the Rules of Cross Media Pollution in International Drainage Basins by the International Law Association).

4. *See* Gyula Bandi, *The Right to Environment in Theory and in Practice: The Hungarian Experience*, 8 CONN. J. INT'L L. 439, 447-88 nn.7-8 (1993) (discussing the development of a broad "right to an environment" in Eastern and Central Europe); Ruth Greenspan Bell & Susan E. Brom, *Lessons Learned in the Transfer of U.S.-Generated Environmental Compliance Tools: Compliance Schedules for Poland*, 27 ENVTL. L. REP. 10,296, 10,298 (1997) (pointing out that in Poland there is a strong desire to move toward integrated or multimedia permits in the light of EU's movement toward integrated pollution prevention and control); Viktoria Ter-Nikoghosyan & Narine Karamian, *Armenian Bottleneck: Building Authorities and Public Groups for Environmental Enforcement*, 13 NAT'L ASS'N ATT'Y GEN.: NAT'L ENVTL. ENFORCEMENT J. 39, 41 (1998) (describing the Armenian attempts to integrate its environmental legislation).

5. European Commission, Third Environmental Action Programme, 1983 O.J. (C 46) 3 [hereinafter Third Environmental Action Programme].

6. Message of the President Relative to Reorganization Plan Nos. 3 and 4 of 1970, July 9, 1970, *in* U.S. COUNCIL ON ENVTL. QUALITY, ENVTL. REP., FIRST ANNUAL REP. 295 (1970) [hereinafter ENVIRONMENTAL REPORT].

integrated pollution control in the environmental law of the European Union. Finally, Part V offers a comparison and critique of those United States and European Union efforts, concluding that the practical implementation of the integrated concept has proven to be very difficult, and examples of a truly holistic multimedia permit can rarely be found.

II. GOALS OF INTEGRATED POLLUTION CONTROL

A. Defining the Term

Although the concept of integrated pollution control is en vogue worldwide, the term is vague and ill-defined.[7] The term was used by a government for the first time in a legislative proposal in 1988.[8] Yet a consistent definition of the term "integrated pollution control" is still missing. In its plain meaning, the term integration means the process of making whole or combining into one.[9] An examination of integration in the area of environmental law must take into account the differentiation between two basic types of integration: external and internal.[10]

1. External Integration

"External integration" refers to the integration of environmental issues into other nonenvironmental policy areas such as economic and social policy. Environmental policy, it is argued, must be consistent with other major government policy decisions for overall policy effective-

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7. Many scholars, instead of defining the term precisely, prefer to describe it in a very broad manner. *See* FRANCES IRWIN, *Introduction to Integrated Pollution Control*, *in* INTEGRATED POLLUTION CONTROL IN EUROPE AND IN NORTH AMERICA 3, 9-11 (Nigel Haigh & Frances Irwin eds., 1990) [hereinafter IRWIN, INTEGRATED POLLUTION CONTROL] (pointing out that, at a Symposium on Integrated Pollution Control in Brussels, participants discussed how integrated pollution control might be achieved, not what it meant or why it mattered); *see also* WILLIAM H. RODGERS, ENVIRONMENTAL LAW 59 (2d ed. 1994) (describing integrated pollution control as an approach which seeks to avoid mistakes of the past which treated the environment as easily separable into discrete media); Lakshman Guruswamy, *Integrating Thoughtways: Reopening of the Environmental Mind*, 1989 WIS. L. REV. 463, 492-93 (1989) (giving no definition but describing the strategic principles of an integrated approach).

8. IRWIN, INTEGRATED POLLUTION CONTROL, *supra* note 7, at 10 (referring to the United Kingdom's proposal for legislation that would apply best available technology across media at major facilities).

9. BLACK'S LAW DICTIONARY 812 (7th ed. 1999).

10. *See* Michael G. Faure, *The Harmonization, Codification and Integration of Environmental Law: A Search for Definitions*, 9 EUR. ENVTL. L. REV. 181 (2000); Harald Kracht, Andreas Wasielewski, *Integrierte Vermeidung und Verminderung der Umweltverschmutzung*, *in* 1 HANDBUCH ZUM EUROPÄISCHEN UND DEUTSCHEN UMWELTRECHT 1070, 1072 (1998); Meinhard Schröder, *Europarecht und integriertes Umweltrecht*, 22 NATUR UND RECHT 481, 482 (2000).

ness.[11] The need to reconcile environmental considerations with conflicting policy goals was central to considerations at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, during which the Rio Declaration[12] and Agenda 21[13] were adopted. Both documents championed the concept of sustainable development, which essentially integrates environmental issues and development issues.[14] Similarly, the "integration clause" of the EU Treaty[15] calls for the integration of environmental concerns in all policies of the European Union, including transportation, energy, development, industry, agriculture and the internal market.[16] In the United States, external integration is achieved to a degree by the Environmental Impact Statement (EIS) process under the National Environmental Policy Act of 1969 (NEPA),[17] which requires a comprehensive analysis of the environmental impacts of all major federal actions[18] and legislative proposals.[19]

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11. *See* MICHAEL KLOEPFER, UMWELTRECHT 558 (2d ed. 1999).

12. United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, *in* 1 REPORT OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT 3, U.N. DOC. A/CONF.151/26/REV.1 (1992).

13. United Nations Conference on Environment and Development, *Agenda 21*, *in* 1 REPORT OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT 9, U.N. DOC. A/CONF.151/26/Rev.1 (1992), *reprinted in* 31 I.L.M. 874 [hereinafter *Agenda 21*].

14. *See* UNEP GLOBAL ENV'T OUTLOOK 2000, *supra* note 1, at 203; Mary Pat Williams Silveira, *International Legal Instruments and Sustainable Development: Principles, Requirements and Restructuring*, 31 WILLAMETTE L. REV. 239, 241-46 (1995) (pointing out that integration of environment and development is difficult to achieve in a world that is dominated by issues that are cross-sectoral and structures that are sectoral); UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP): PROTECTING OUR PLANET—SECURING OUR FUTURE AND HUMAN NEEDS 2-3, 53-73 (R.T. Watson et al. eds., 1998) (identifying key scientific and policy linkages between environmental issues and the need to meet basic human needs for adequate food, clean water and a healthful environment).

15. "Environmental protection requirements must be integrated into the definition and implementation of the Community policies and activities referred to in Article 3, in particular with a view to promoting sustainable development." Treaty Establishing the European Community art. 6, *in* EUROPEAN UNION, CONSOLIDATED TREATIES 45 (1997). *See generally* David Grimeaud, *The Integration of Environmental Concerns into EC Policies: A Genuine Policy Development?*, 9 EUR. ENVTL. L. REV. 207 (2000) (discussing the legal status and limits of the integration principle and expressing doubts that it could form the basis for an annulment action of a Community act); KLOEPFER, *supra* note 11, at 558 (stating that the command to integrate may resemble an environmental impact assessment of European policies).

16. *See* BENJAMIN GÖRLACH ET AL., WUPPERTAL INSTITUTE FOR CLIMATE, ENVIRONMENT AND ENERGY, FROM VIENNA TO HELSINKI—THE PROCESS OF INTEGRATION OF ENVIRONMENTAL ISSUES IN ALL POLICIES OF THE EUROPEAN UNION (2000).

17. National Environmental Policy Act, 42 U.S.C. §§ 4321-4370d (1994).

18. The relevant provision of NEPA reads:

> All agencies of the Federal Government shall . . . (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible

2. Internal Integration

Internal integration, on the other hand, focuses on decision making within the scope of environmental law.[20] It can be understood in both a broad and a narrow sense.[21] Broadly, internal integration means an ecological and holistic approach to pollution control.[22] It refers to the entire range of organizational, legislative and programmatic efforts within environmental law.[23]

One definition of the broad concept can be found in a 1991 recommendation of the Organization for Economic Cooperation and Development (OECD).[24] There, integrated pollution control is defined as "taking into account the effects of activities and substances on the environment as a whole and the whole commercial and environmental life cycle of substances when assessing the risks they pose and when developing and implementing controls to limit their release."[25]

This definition recognizes that substances move between environmental media and that controlling the release of a polluting substance to one environmental medium can result in shifting the

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> official on (i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

42 U.S.C. § 4332(2)(C). *See generally* J. Clarence Davies, *Some Thoughts on Implementing Integration*, 22 ENVTL. L. 139, 144-46 (1992) (considering environmental impact statements under NEPA as major tools used to encourage external integration).

19. *But see* Andrus v. Sierra Club, 442 U.S. 347 (1979) (holding that legislative proposals subject to the EIS requirement include a bill or legislative proposal but not requests for appropriations); Pub. Citizen v. Office of U.S. Trade Representative, 5 F.3d 549, 553 (D.C. Cir. 1993) (holding that the submission of the North American Free Trade Agreement (NAFTA) to Congress by the President is not subject to judicial review as a final agency action under the Administrative Procedure Act (APA)); James W. Spensley, *National Environmental Policy Act*, *in* GOVERNMENT INSTITUTES, ENVIRONMENTAL LAW HANDBOOK 483, 508-09 (Thomas F.P. Sullivan ed., 16th ed. 2001) (noting that very little attention has been given to proposals for legislation under NEPA because most legislative proposals come from the President or Executive Office of the President).

20. Faure, *supra* note 10, at 181.

21. *See* IRWIN, INTEGRATED POLLUTION CONTROL, *supra* note 7, at 9-10.

22. *See id.*

23. *Id.* at 9.

24. COUNCIL OF THE OECD, RECOMMENDATION ON INTEGRATED POLLUTION PREVENTION AND CONTROL, C (90) 164/Final, (1991) [hereinafter OECD RECOMMENDATION]; Neil Emmott & Nigel Haigh, *Integrated Pollution Prevention and Control: UK and EC Approaches and Possible Next Steps*, 8 J. ENVTL. L. 301, 301-02 (1996).

25. OECD RECOMMENDATION art. I(a).

pollution to another medium.[26] Therefore, the underlying principle of integrated pollution control is to consider the environment as a whole instead of regulating a single media (air, water and land) separately.[27]

Integrated pollution control in the broad sense "can be applied in a myriad of ways and assume a variety of patterns."[28] It may include the assessment of cross-media impacts of substances and activities, assessments of energy efficiency, considerations of the "life cycle" of substances and products (cradle to grave principle), and minimization of the quantity and harmfulness of wastes.[29] This comprehensive concept has remained largely theory,[30] although several OECD countries have started implementing the concept in a narrower form.[31]

B. The Case for Integration

The movement towards integrated pollution control is mainly driven by dissatisfaction with the single medium approach to pollution regulation.[32] Supporters of the integrated approach argue that a single media approach is not always an efficient way of tackling pollution problems.[33] Dealing with pollution problems one medium at a time often results in the transfer of the pollutant between media without solving the overall problem.[34] One frequently cited example of cross-media shifting of pollution is the Clean Air Act[35] requirement that most utilities burning high sulfur coal use scrubbers to remove sulfur dioxide from flue gases.[36] The scrubbing, however, produces three to six tons of sludge for every

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26. *Id.* pmbl.
27. *Id.* ¶ 1.
28. Guruswamy, *supra* note 7, at 492.
29. OECD RECOMMENDATION, *supra* note 24, app., ¶ 1.
30. EBERHARD BOHNE ET AL., FORSCHUNGSINSTITUT FÜR ÖFFENTLICHE VERWALTUNG SPEYER, THE EVOLUTION OF INTEGRATED PERMITTING AND INSPECTIONS OF INDUSTRIAL INSTALLATIONS IN THE EUROPEAN UNION 5 (1998).
31. *See* discussion *infra* Part IV.
32. *See* Frances H. Irwin, *An Integrated Framework for Preventing Pollution and Protecting the Environment*, 22 ENVTL. L. 1, 1-18 (1991) (listing seven reasons for integrated pollution control); IRWIN, INTEGRATED POLLUTION CONTROL, *supra* note 7, at 7-9 (enumerating five reasons for integration of environmental law); Bradford C. Mank, *The Environmental Protection Agency's Project XL and Other Regulatory Reform Initiatives: The Need for Legislative Authorization*, 25 ECOLOGY L.Q. 1, 7-9 (1998) (giving five reasons for an integrated approach).
33. Peter J. Fontaine, *EPA's Multimedia Enforcement Strategy: The Struggle to Close the Environmental Compliance Circle*, 18 COLUM. J. ENVTL. L. 31, 33-34 (1993); *but see* BOHNE ET AL., *supra* note 30, at 42 (expressing doubts whether the shifting of pollution between various environmental media is of practical or more theoretical relevance).
34. Fontaine, *supra* note 33, at 33-34.
35. Clean Air Act, 42 U.S.C. §§ 7401-7671q (1994).
36. Guruswamy, *supra* note 7, at 473-74; Mank, *supra* note 32, at 7.

ton of sulfur dioxide removed from the air.[37] "Indirect cross media transfers" also occur once pollution is released into the environment.[38] The pollution of the Great Lakes, for example, is not primarily a problem of direct discharges into the water but of atmospheric deposition.[39]

Finally, critics contend that the current system of single media statutes has created a regime with overlapping and poorly coordinated requirements which neglects opportunities for holistic management.[40] This increases the costs and complexity of compliance with environmental regulation and impedes the ability to set priorities.[41] In sum, the theory of integration is very appealing.[42] Practical implementation, however, has proven to be difficult.[43]

C. Dimensions of Integration

For analytical purposes, it is useful to distinguish four basic types of internal integration: substantive integration, procedural integration, organizational integration and product-oriented integration.[44]

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37. Mank, *supra* note 32, at 7-8 (pointing out that some types of air pollutants are more dangerous if they reach the ground and contaminate food than if they are simply inhaled).

38. Guruswamy, *supra* note 7, at 473-75.

39. *See* Rabe, *supra* note 3, at 258-59 (stating that the costly efforts to clean up the Great Lakes through concentrating on point sources of pollution has been inefficient because, with regard to metal compounds such as lead, cadmium, mercury, and arsenic, air pollution is often the only possible source of pollution); Fontaine, *supra* note 33, at 34 (pointing out that the construction of taller smoke stacks at coal burning power plants has contributed to the acid rain problem and the pollution in many lakes in the Northeastern United States and Canada).

40. Mank, *supra* note 32, at 8.

41. *See id.* at 8-9; IRWIN, INTEGRATED POLLUTION CONTROL, *supra* note 7, at 8.

42. *Contra* James E. Krier & Mark Brownstein, *On Integrated Pollution Control*, 22 ENVTL. L. 119-24 (1992) (stating that integrated pollution control consists of nothing more than assertions because there is not enough evidence to show that integrated pollution control would actually accomplish what its supporters say).

43. From the very outset the integrated approach was confronted with criticism.

> [W]e now understand that the environment is all interconnected. It is a system. We are deeply impressed as we have never been before with the interrelation of parts. Believing, then, that everything is interconnected we fall into the logical fallacy of believing the only way to improve those interconnections is to deal with them all at once. Clearly everything is connected. But because everything is interconnected, it is beyond our capacity to manipulate variables comprehensively. Because everything is interconnected, the whole environmental problem is beyond our capacity to control in one unified policy.

Charles Lindblom, *Incrementalism and Environmentalism*, *in* MANAGING THE ENVIRONMENT 83, 84 (U.S. EPA ed., 1973). *Cf.* Charles Lindblom, *The Science of Muddling Through*, 19 PUB. ADMIN. REV. 79, 79-80 (1959) (arguing that an integrated approach to administrative problems "assumes intellectual capacities and sources of information that men simply do not possess, and it is even more absurd as an approach to policy when . . . time and money [are] limited").

44. *Cf.* Schröder, *supra* note 10, at 482 (differentiating between four categories: "materielle Integration" (substantive integration), "produktorientierte Integration" (product

1. Substantive Integration

Substantive integration is what most people think of when the subject is discussed in terms of environmental regulation. It involves comparative judgments, in the context of regulation, about the relative consequences of impacts on different media. The highest degree of substantive integration provides for a *holistic multimedia permit,* which looks at each medium separately and then arrives at an overall judgment by weighing and balancing the positive and negative aspects of a project to the environment.[45] But because no common denominator exists[46] for comparing the impacts of an activity on the different media of air, water, and land, holistic multimedia assessment is difficult to achieve.[47] In fact, the problem is so complex as to raise the question whether regulatory agencies engage in substantive integration at all. As it will be shown, many innovative permit programs only achieve lesser forms of substantive integration by establishing *additive multimedia permits*, which look at each environmental medium separately without reaching an overall judgment on all relevant media.[48]

2. Procedural Integration

Contrary to substantive integration, procedural integration refers to actions within the permitting process itself.[49] It allows different agencies (or different offices of the same agency) to coordinate their regulatory activities.

In its highest form, procedural integration can, for example, result in the issuance of a single permit to replace what was formerly several permits. Lesser levels of procedural integration might simply coordinate the renewal date of existing, individual permits, or might address other specific procedural differences between a regulation agency's air and water offices, for example. Some authors characterize this lesser level of

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oriented integration), "formelle Integration" (procedural integration), and "legislatorische Integration" (legislative integration)). *But see* BOHNE ET AL., *supra* note 30, at 41 (distinguishing only between three categories: substantive, procedural, organizational integration).

45. *See* BOHNE ET AL., *supra* note 30, at 42-44.

46. *But see* Terry Davies, *The United States: Experiment and Fragmentation*, *in* INTEGRATED POLLUTION CONTROL, *supra* note 7, at 51, 60 (expressing beliefs that quantitative risk analysis might be used as a common denominator); *see* Krier & Brownstein, *supra* note 42, at 133-34 (arguing strongly against the use of risk analysis as a common denominator).

47. *See* BOHNE ET AL., *supra* note 30, at 44.

48. *See id.*

49. *See id.* at 45; Schröder, *supra* note 10, at 482.

procedural integration as *coordination* and the more complete form (resulting in single permits) as *concentration*.[50]

3. Organizational Integration

Organizational integration expresses the regulatory competence of agencies with regard to environmental media. It refers to the question of whether a single agency or different agencies have the competence to issue permits covering the media of air, water, and land.[51]

At basic levels of organizational integration, one can identify different degrees of competence: sole competence, shared competence and lead competence for several or all environmental media.[52] An agency has sole competence when it has the regulatory authority to make all permitting decisions on its own, and has the power to direct other agencies to provide the information necessary to make the decision.[53] Lead competence, on the other hand, depicts a situation where an agency must consult other public institutions, but is not bound by their opinion.[54] Thus, "lead competence" refers to a setting where an agency has the final say on an issue. Finally, shared competence means that an agency is legally bound by the opinion of another public institution.[55] The term "shared competence" is therefore used when an agency needs prior consent from another agency to make a decision.[56]

Of course, there is a strong relationship between procedural and organizational integration. If procedures are designed in a

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50. *See generally* BOHNE ET AL., *supra* note 30, at 45; Schröder, *supra* note 10, at 482.

51. *See* BOHNE ET AL., *supra* note 30, at 45.

52. *Id.*

53. Sole competence is provided in section 75, paragraph 1, sentence 1, Verwaltungsverfahrensgesetz, (German Administrative Law Code) v. 25.5.1976 (BGBl. I 1253, last amended 21.9.1998 BGBl.I 3050) (stipulating a concentration of competence, thus the planning agency in a plan fixation procedure has sole competence).

54. *See* BOHNE ET AL., *supra* note 30, at 46. An example of such a duty of consultation can be seen in section 10, paragraph 5, Gesetz zum Schutz vor schaedlichen Umwelteinwirkungen durch Luftverunreinigungen, Geraeusche, Erschuetterungen und aehnliche Vorgaenge (Bundesimmissionsschutzgesetz) v. 15. 3.1974 (BGBl. I S. 721, last amended 27.7.2001, BGBl. I S. 1973) (Act for Protection Against Harmful Effects of the Environment from Air Pollution, Noise, Vibrations, and Similar Occurrences of March 15, 1974) (requiring the permitting agency to consult other agencies whose interests are affected by a pending permit application).

55. *See* BOHNE ET AL., *supra* note 30, at 46.

56. Section 36, paragraph 2, sentence 1, Baugesetzbuch (German Zoning Law Code) v. 27.7.1997 (BGBl. I 2141, last amended 27.7.2001, BGBl. I 2013) (issuing of a operation and construction permit for an industrial installation under the Bundesimmissionsschutzgesetz requires prior consent of the municipality when the permitting agency decides issues of construction and zoning law).

comprehensive manner, it is very likely that the same holds true for regulatory competence.

4. Integrated Product Policy

Product-oriented integration attempts to take environmental concerns into account in production processes.[57] Integrated product policy seeks to address the whole life cycle of a product, avoiding the shifting of environmental problems from one medium to another.[58] Integrated product policy has become an issue of environmental policy in both the United States[59] and the European Union.[60]

III. INTEGRATED APPROACHES IN THE UNITED STATES

A. Federal Environmental Law

1. Federal Statutes

a. Fragmented Statutory Patchwork

The major federal pollution control statutes in the United States have credited a media-specific permitting system. Both the Clean Water Act (CWA),[61] which established the National Pollutant Discharge Elimination System (NPDES),[62] and the Clean Air Act (CAA),[63] which introduced the Title V operating permit program,[64] are limited to regulating releases of pollutants into a single environmental medium.

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57. Schröder, *supra* note 10, at 482.

58. EUROPEAN COMMISSION DG XI, EXECUTIVE SUMMARY FROM THE FINAL REPORT ON INTEGRATED PRODUCT POLICY 1 (1998).

59. In the United States, the EPA Office for Pollution Prevention and Toxics (OPPT) initiated the Design for the Environment Program in 1992 which aims at forming voluntary partnerships with industry, universities, research institutions, public interest groups, and other government agencies to incorporate environmental considerations into the design and redesign of products, processes, and technical management systems. *See generally* U.S. EPA, Office of Pollution Prevention and Toxics, Design for the Environment, *at* http://www.epa.gov/opptintr/dfe (last updated Aug. 8, 2001).

60. *See* Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the Sixth Environment Action Programme of the European Community Environment 2010: Our Future, Our Choice, COM (01)31 final at 54 (announcing the development of an integrated product policy approach which promotes intelligent product design that reduces the environmental impacts of products from their conception to the end of their useful life).

61. Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1387 (1994).

62. 33 U.S.C. § 1342.

63. Clean Air Act, 42 U.S.C. §§ 7401-7671q (1994).

64. 42 U.S.C. §§ 7661-7661f (requiring all major facilities to have a facility wide operating permit for air and thus integrating all previously issued permits for single sources of air pollution).

Similarly the hazardous waste permit program under the Resource Conservation and Recovery Act (RCRA)[65] is primarily aimed at protecting the remaining media, soil and groundwater, from pollution. In fact, when Congress enacted RCRA, it was mainly concerned that hazardous waste left over from air and water treatment might cause pollution to other environmental media.[66] Yet in prescribing a best demonstrated achievable control technology standard at Treatment, Storage, and Disposal Facilities, Congress helped contribute to the cross-media pollution problem.[67] In practice, that standard has typically meant incineration, which shifts pollution from the soil to air again.[68] The EPA's "only truly integrated statute"[69] is the Toxic Substances Control Act (TSCA).[70] It is based on the recognition that toxic substances do not exclusively pollute specific media but can also be found in food and consumer products. Congress therefore vested the EPA with the authority to control toxic substances in all media.[71] However, the integrated thrust of TSCA is limited. If the EPA finds a risk to health or the environment associated with a chemical substance which involves laws not administered by the EPA, Section 9(a)(I) of TSCA provides only the power to submit a report to the competent agency.[72] Only when the determination of a risk involves laws administered by the EPA, may it use the authority contained in other federal laws to protect against such a risk.[73] Thus, TSCA does not override the existing medium oriented statutes in environmental law.[74]

As an alternative to this existing fragmented patchwork of pollution control statutes, several ideas have been offered creating an integrated pollution control statute.[75] However, none of these proposals have yet

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65. Solid Waste Disposal Act, 42 U.S.C. §§ 6921-6931 (1994).

66. *See* ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 765 (2d ed. 1998).

67. 42 U.S.C. § 6924.

68. PLATER ET AL., *supra* note 66, at 765.

69. Davies, *supra* note 18, at 144.

70. 15 U.S.C. §§ 2601-2692 (1994).

71. Guruswamy, *supra* note 7, at 523 (pointing out that the Council on Environmental Quality recommended that the EPA should be authorized to control toxic substances since no other agency considered itself completely responsible).

72. 15 U.S.C. § 2608(a)(1).

73. *Id.* § 2608(b).

74. *Contra* Guruswamy, *supra* note 7, at 525.

75. *See, e.g.*, NAT'L ACAD. OF PUB. ADMIN., RESOLVING THE PARADOX OF ENVIRONMENTAL PROTECTION, AN AGENDA FOR CONGRESS, EPA AND THE STATES 65 (1997) [hereinafter NAPA REPORT 1997] (calling Congress and EPA to develop an integrated statute). *See* David Clark, *Chasing Rainbows: Is an Integrated Statute the Pot of Gold for Environmental Policy?*, 22 ENVTL. L. 281-82 (1992) (arguing strongly for an integrated statute); Guruswamy, *supra* note 7, at 518 (discussing the Conservation Foundation Proposal).

borne fruit–and they are not likely to. Instead, the EPA pursues an approach that seeks integration through several programs of innovation created in the context of existing legislation.[76]

b. Pulp and Paper "Cluster Rule"

One example of integration through existing legislation can be seen in the promulgation of the pulp and paper "cluster rule."[77] Based on its regulatory authority under the Clean Air Act and Clean Water Act, the EPA proposed an integrated, multimedia regulation, the so-called "cluster rule," in 1993 to control the release of pollutants to two media (air and water) from the pulp and paper industry.[78] After a re-proposal in 1996,[79] the EPA finally adopted the pulp and paper cluster rule in 1998.[80]

Concerning water, the rule sets effluent limits for toxic pollutants in wastewater discharges from the bleaching process and for the final discharge based on substituting chlorine dioxide for elemental chlorine.[81] With regard to air, the cluster rule promulgates emission standards for hazardous air pollutants under the Clean Air Act for the source category of pulp and paper production.[82] The rule requires both new and existing

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76. *See infra* Part III.A.3.

77. Final Pulp and Paper "Cluster Rule," 63 Fed. Reg. 18,504, 18,507 (Apr. 15, 1998) (to be codified at 40 C.F.R. pt. 63, 261, and 430).

78.

> EPA has integrated the development of the regulations discussed today to provide greater protection of human health and the environment, . . . promote and facilitate pollution prevention, and emphasize the multimedia nature of pollution control. . . .
>
> . . . A holistic approach to implementing these pollution prevention technologies would contribute to the long term goal of minimizing impacts of mills in all environmental media by moving mills toward closed-loop process operations.

Final Pulp and Paper "Cluster Rule," 63 Fed. Reg. at 18,507. *See generally* Susan Bruninga, *Pulp Paper Cluster Rule Seeks Cuts in Dioxin, Hazardous Air Pollutants*, 28 ENV'T REP. 1406 (1997); Mank, *supra* note 32, at 13 (discussing attempts by the EPA to develop integrative approaches); U.S. EPA, OFFICE OF WATER, FACT SHEET EPA'S FINAL PULP, PAPER, AND "CARDBOARD CLUSTER RULE" (1997), EPA doc. EPA-821-F-97-010.

79. *See* Mank, *supra* note 32, at 13-15 (arguing that a specific legislative authorization for cluster rules would likely have encouraged the EPA to move forward more quickly in promulgating a final rule).

80. Final Pulp and Paper "Cluster Rule," 63 Fed. Reg. at 18,504; Arnall, Golden & Gregory, EPA Issues Pulp and Paper "Cluster" Rules, 9 GA. ENVTL. L. LETTER 9-10 (1998).

81. Arnall, Golden & Gregory, *supra* note 80. Environmental organizations which called for regulations providing for zero chlorine discharge limits did not succeed because EPA found the cost imposed to industry would be relatively high compared to the benefits. PLATER ET AL., *supra* note 66, at 512-13.

82. For example, methanol, chlorinated compounds, formaldehyde, benzene and xylene; Final Pulp and Paper "Cluster Rule," 63 Fed. Reg. at 18,518.

pulp and paper mills to reduce, capture, and treat emissions of toxic air pollutants occurring during the manufacturing process.[83]

The cluster rule made significant efforts toward substantive integration. In determining the applicable control technology for effluent limits, the EPA conducted a series of analyses assessing the impacts of various combinations of technological standards,[84] taking into account the adverse impacts for air quality.[85] Similarly, in determining the air control technology, the EPA considered the adverse effects on water quality.[86] Thus, prior to selecting the control technology for the cluster rule, the EPA engaged in a balancing of cross-media effects. Because the cluster rules stipulate two separate standards—one for air and one for water—the rules constitute "two rules with a common preamble."[87]

2. The EPA's Organizational Structure

In an ideal world, a single omnipotent regulatory entity would know everything. However, in modern state administration, with its highly sophisticated and specialized offices and agencies, "many things are known but only in separate heads."[88] The challenge is to integrate the different segments into one unified picture.

When President Nixon created the EPA in 1970 by executive order,[89] he was inspired by ideas and concepts of integration.[90] He declared that "[d]espite its complexity, for pollution control purposes the environment should be perceived as a single, interrelated system."[91] By establishing

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83. *Id.*

84. The EPA included in its assessment of control technologies the following standards of the CWA and CAA: BAT—best available technology economically achievable, CWA § 304(b)(2); BCT—best conventional pollutant control technology, CWA § 304(b)(4); BPT—best practical control technology currently available, CWA § 304(b)(1); PSES—pretreatment standard for existing sources of indirect discharge, CWA § 307(b); PSNS—pretreatment standard for new sources, CWA § 307(b)(c); NSPS—new source performance standard, CWA § 306(a)(1); MACT—maximum achievable control technology, CAA § 112(d)(2); BMP—best management practices, CWA § 304(e).

85. First Proposal of the Paper and Pulp "Cluster Rule," 58 Fed. Reg. 66,078, 66,094 (Dec. 17, 1993) (to be codified at C.F.R. pt. 63 and 430).

86. *Id.* at 66,094.

87. NAPA REPORT 1997, *supra* note 75, at 66.

88. Statement of Dr. Andreas Troge, German Federal Environmental Protection Agency, *reprinted in* GÖRLACH ET AL., *supra* note 16, at 2.

89. *See* Message from the President of the United States, Reorganization Plan No. 3, H.R. MISC. DOC. NO. 91-364 (1970).

90. Guruswamy, *supra* note 7, at 515 (citing ALFRED MARCUS, PROMISE AND PERFORMANCE CHOOSING AND IMPLEMENTATION OF ENVIRONMENTAL POLICY 31 (1980)).

91. ENVIRONMENTAL REPORT, *supra* note 6, at 295.

> A single source may pollute the air with smoke and chemicals, the land with solid wastes, and a river with or lake with chemicals and other wastes. Control of the

the EPA, Nixon concentrated the regulatory authority of five major environmental statutes that were previously administered by different agencies into a single agency.[92] Air pollution was previously under the regulatory authority of National Air Pollution Control Administration in the Department of the Interior; water pollution was previously administered by the Federal Water Pollution Control Administration in the Department of the Interior; solid waste management, drinking water quality and radiological health were previously controlled by the Department of Health, Education, and Welfare; pesticides regulation and research was administered by both the Food and Drug Administration and the Agriculture Department; and ambient standard setting for radiation was previously conducted by the Atomic Energy Commission. Given the fact that the EPA was given the sole competence for five different statutes covering three different media, the creation of the EPA certainly constitutes a significant step toward organizational integration, with substantial opportunities for procedural and substantive integration.

However, the implementation of an integrated approach within the EPA has turned out to be more difficult than originally anticipated.[93] Contrary to the original plan which envisaged a organization along functional lines,[94] the EPA went only "halfway down the integration road"[95] and remained "half functional and half fragmented."[96] One EPA administrator referred to his own agency as a mere "holding company for

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> air pollution may create more solid wastes which then pollute the land or water. Control of the water polluting effluent may convert it into solid wastes, which must be disposed of on land . . . .
>
> A far more effective approach to pollution control would:
>
> — Identify pollutants.
>
> — Trace them through the entire ecological chain, observing and recording changes in form as they occur.
>
> — Determine the total exposure of man and his environment.
>
> — Examine interactions among forms of pollution.
>
> — Identify where the ecological chain interdiction would be most appropriate.

Id.

92. *See id.* at 25.

93. *See* Davies, *supra* note 46, at 52 (stating that the first EPA Administrator, William Ruckelshaus, was more committed to meeting the new demands being imposed on the agency than to the functional approach).

94. *Id.* (pointing out that the initially proposed structure for EPA provided for five functionally based divisions: research, monitoring, standard setting, enforcement, and assistance); Guruswamy, *supra* note 7, at 488.

95. Davies, *supra* note 46, at 52-53 (observing that the "first permanent organization of EPA retained the media (air and water) and categorical (pesticides, radiation, and solid waste) offices but also created offices for research and monitoring, planning and management, and enforcement").

96. Guruswamy, *supra* note 7, at 515-16.

single medium programs."[97] There are several reasons for this development. First, the EPA's authority is mainly derived from a set of media-specific statutes which precluded consideration of the environment as a whole.[98] The EPA still has no overarching statute authorizing it to integrate media-based programs.[99] Second, the staff who came to the agency to administer the media-specific programs transferred from the specialized agencies that originally held the regulatory authority and brought with them an abiding loyalty to the media-specific statutes.[100] Third, the congressional committees having responsibility for the EPA are structured in a fragmented fashion which reinforces the fragmented approach within the agency.[101]

Nevertheless, in the last decade and even earlier, the EPA has made several attempts to strengthen its functional management structure.[102] One such attempt was the creation of the Office of Enforcement and Compliance Assurance (OECA) under Administrator Carol Browner, providing a multimedia review of both enforcement and compliance assistance.[103] In addition, Administrator Browner created the Office of Environmental Information (OEI) in 1998, whose mission was to improve access to information about environmental conditions.[104] However, the development of an integrated data infrastructure has been impeded by the fact that the decisions on which data can enter the information system still lie with the media-specific offices and the OECA.[105] Finally, the EPA has allowed some regional offices, notably the New England office, to reorganize along functional lines rather than by medium or EPA program. The New England regional office eliminated

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97. Administrator Lee M. Thomas, Controlling Pollution for Permanent Protection: Toward a Whole System Approach to Environmental Policy, Speech for Natural Resources Council of America 12 (May 30, 1985).

98. *See* NAPA REPORT 1997, *supra* note 87, at 65.

99. *Id.* at 64 (observing that EPA has not yet produced a comprehensive reorganization plan to "break down the walls between the media offices").

100. Guruswamy, *supra* note 7, at 489.

101. *See* NAPA REPORT 1997, *supra* note 87, at 64; Guruswamy, *supra* note 7, at 489.

102. Davies, *supra* note 46, at 58 (referring to the implementation of Integrated Environmental Management Program in 1980).

103. In the last years, the OECA also developed a strategy called "integrated compliance assurance." However, the label "integrated" in this context is not related to a holistic understanding of the environment. Here "integrated" means the enforcement involves self-evaluation and compliance assistance, as well as traditional regulatory practices. *See* NAT'L ACAD. OF PUB. ADMIN., 1 ENVIRONMENT.GOV: TRANSFORMING ENVIRONMENTAL PROTECTION FOR THE 21ST CENTURY: RESEARCH PAPERS 167 (2000) [hereinafter NAPA REPORT 2000]; *see also* NAPA REPORT 1997, *supra* note 87, at 64 (pointing out that OECA is retraining its specialized pollution inspectors to enable them to inspect all sources of a facility's pollution).

104. NAPA REPORT 2000, *supra* note 103, at 170.

105. *Id.* at 171.

its traditional offices for air, water, and solid waste and created two multimedia offices: the Office of Ecosystem Protection (OEP) and the Office of Environmental Stewardship (OES).[106]

Despite those innovations, the EPA's management structure continues to be governed by a mix of media-specific and functional offices. Efforts toward organizational integration remain significantly limited by the EPA's internal management structure. The efforts to adopt a multimedia management structure are "still in their infancy."[107]

3. The EPA's Reform Initiatives

In an effort to depart from the prevailing command-and-control strategy, the EPA launched various initiatives during the last decade which were aimed at increasing the flexibility of regulation. For the purpose of this Article, we turn now to two particularly interesting programs: the Common Sense Initiative and Project XL.[108]

a. Common Sense Initiative

The Common Sense Initiative (CSI) was introduced in 1994 as an industry sector-based approach to environmental policy.[109] It was launched to encourage industry, regulators, and environmental interest groups to develop cleaner, cheaper, and smarter approaches to protect the environment and the public health. The EPA created multi-stakeholder panels to consider these issues in six industrial sectors: metal finishing and plating, electronics and computers, iron and steel, auto assembly,

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106. *See generally* JODI PERRAS, NAT'L ACAD. OF PUB. ADMIN., REINVENTING EPA NEW ENGLAND: AN EPA REGIONAL OFFICE TESTS INNOVATIVE APPROACHES TO ENVIRONMENTAL PROTECTION 5 (2000).

107. NAPA REPORT 2000, *supra* note 103, at 180-81.

108. In this context also, EPA's Multimedia Pollution Prevention Permitting Project (M4P) has to be mentioned. However, the M4P does not constitute a separate project experiment, but rather gathers and evaluates the data of existing multimedia permitting efforts in New Jersey, Arizona, and Massachusetts. Those state efforts will be covered in this Article, *infra* Part III.B. *See generally* U.S. EPA, MULTIMEDIA POLLUTION PREVENTION IN PERMITTING PROJECT, PROJECT REPORT (1997).

109. U.S. EPA Administrator's Update No. 12, Common Sense Initiative 1 (1994) (stressing that the CSI would establish a fundamentally different system of environmental protection that replaces the pollutant-by-pollutant approach of the past with an industry by industry approach of the future). *See generally* KERR, GREINER, ANDERSON, & APRIL, INC., ANALYSIS AND EVALUATION OF THE EPA COMMON SENSE INITIATIVE (1999), *available at* http://www.epa.gov/sectors/whatsnew.htm [hereinafter EVALUATION REPORT CSI]; Daniel F. Fiorino, *Toward a New System of Environmental Regulation: The Case for an Industry Sector Approach*, 26 ENVTL. L. 457, 470-72 (1996); Mank, *supra* note 32, at 14; John M. Scagnelli, Pollution Prevention Act, in GOVERNMENT INSTITUTES, ENVIRONMENTAL LAW HANDBOOK 659 (Thomas F.P. Sullivan ed., 16th ed. 2001); NAPA REPORT 1997, *supra* note 87, at 17.

petroleum refining, and printing.[110] The six panels were charged with identifying opportunities for innovation in six key areas: (1) regulation, (2) pollution prevention, (3) record keeping and reporting, (4) compliance and enforcement, (5) permitting, and (6) environmental technology.[111] None of the targeted areas explicitly addressed integration. However, the CSI process itself departed from a media-specific regulatory approach and sought to view an industry's environmental impacts holistically.[112] Thus, it can be considered to be pursuing an integrated approach. The question, however, is whether the CSI process (which ended in 1998) produced integrated regulatory alternatives. Some of the panels did, in fact, identify integrated alternatives to the existing regulatory scheme.[113]

The CSI printing sector committee, for example, developed PrintSTEP (Printers Simplified Total Environmental Partnership), an alternative regulatory model which consolidates and simplifies the permitting process for printers.[114] The program introduced a staggered regulatory scheme whose requirements increase as emissions or waste increase from a particular printer. Printers with the lowest levels of emissions and waste are only required to notify the regulating agencies of their activities.[115] Printers releasing greater amounts of emissions are required to enter a so-called "PrintSTEP Agreement."[116] This agreement replaces all of the printer's federal, state, and local permits related to waste water, hazardous waste, storm water, and air emissions and incorporates them into one comprehensive document.[117] The program promotes a holistic view of printing facilities which should discourage cross-media transfers of pollutants. Yet, it does not provide any sort of cross-media balancing. As to the degree of substantive integration, the

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110. In addition, EPA set up the CSI Council as a federal overarching body. Common Sense Initiative Council Advisory Committee: Establishment, 59 Fed. Reg. 55,117 (Nov. 3, 1994).

111. *See* EVALUATION REPORT CSI, *supra* note 109, at 2-3.

112. Scagnelli, *supra* note 109, at 579; Fiorino, *supra* note 109, at 471 (considering CSI the first comprehensive attempt by EPA to look beyond its medium specific programs and define industrial sectors as sets of related environmental issues).

113. U.S. EPA, OFFICE OF POLICY AND REINVENTION, STATUS OF THE IMPLEMENTATION OF THE COMMON SENSE INITIATIVE RECOMMENDATIONS (1999), *available at* http://www.epa.gov/sectors/whatsnew.htm.

114. EVALUATION REPORT CSI, *supra* note 109, at 10; U.S. EPA, COMMON SENSE INITIATIVE, PRINTSTEP PILOT PROGRAM: STATE GUIDE TO PRINTSTEP, i-1—i-3 (1999), *available at* http//www.epa.gov/sectors/pdf/gudtosts.pdf [hereinafter State Guide]; SUSAN C. HELMS ET AL., *The Potential and Pitfalls of Innovative Permits, Learning from New Jersey's Facility Wide Permit Program in* NAPA REPORT 2000, *supra* note 103, at 104. *See generally* U.S. EPA, COMMON SENSE INITIATIVE, PRINTING SECTOR SUBCOMMITTEE FACT SHEET (1999).

115. *See* State Guide, *supra* note 114, at 1-3.

116. *See id.*

117. *Id.* at 1-4.

PrintSTEP program therefore can be qualified as an additive multimedia assessment.

Another example of efforts toward integration can be found in the CSI Iron & Steel Sector Multimedia Permitting Project.[118] The workgroup of the Iron & Steel Sector sought to create a multimedia permit model for a steel mini-mill in Texas, which integrated and simplified permit requirements for all media.[119] The goal was to incorporate pollution prevention planning into the permit, minimize cross-media pollutant transfers, and reduce paperwork and administrative burdens for both industry and regulatory agencies.[120] However, the permit was never implemented. A significant obstacle in developing the multimedia permit was the lack of data on all process streams to complete the mass balances for the facility.[121]

The CSI process also made some progress toward procedural integration. The Sector on Computers and Electronics, for example, proposed a Consolidated Uniform Report for the Environment (CURE).[122] This recommendation, based on the work of the Texas Natural Resource Conservation Commission and CSI members, developed a single reporting form for the electronics and computers industry to replace thirteen separate environmental reports used in Texas.[123]

In summary, the CSI process promoted a holistic consideration of all media within an industrial sector, and it created programs and proposals which moved toward procedural and substantive integration. However, the example of the Multimedia Permitting Project in the Iron and Steel Sector showed the limits of a truly integrated substantive approach. Not only do we currently lack the data necessary to make cross-media, mass balancing judgments, but it must be doubted whether we will ever be able to engage in such mass balancing procedures at all.

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118. U.S. EPA, COMMON SENSE INITIATIVE, ISSUES SUMMARY AND RECOMMENDATIONS ON THE MULTIMEDIA PERMIT PROJECT, IRON AND STEEL SECTOR—PERMITS WORKGROUP (1997).

119. *Id.* *See generally* U.S. EPA, COMMON SENSE INITIATIVE, IRON AND STEEL SECTOR SUBCOMMITTEE FACT SHEET (1999).

120. HELMS ET AL., *supra* note 114, at 105-06.

121. *Id.* (pointing out that the costs to collect data on air and water were estimated to be approximately $250,000).

122. U.S. EPA, COMMON SENSE INITIATIVE, COMPUTER AND ELECTRONIC SECTOR SUB-COMMITTEE FACT SHEET 7 (1999).

123. A sector specific database listing each applicable federal and state rule or regulation that requires record keeping or reporting is available at http://www.pwbrc.org.

b. Project XL

Project XL, which stands for "eXcellence and Leadership," is a national pilot program aimed at promoting and testing environmental regulatory innovations.[124] It was launched by the EPA in 1995 as part of President Clinton's National Performance Review regulatory reinvention initiative.[125] Under this program participants in four categories—states, local governments, businesses, and federal facilities—were given flexibility to depart from existing regulatory requirements[126] in exchange for enforceable commitments to achieve environmental results that are superior to and cheaper than under conventional regulations.[127] To participate in Project XL, participants are required to submit an alternative pollution reduction strategy pursuant to eight criteria: superior environmental results,[128] cost savings and paperwork reduction, stakeholder support, innovation/multimedia pollution prevention, transferability to other facilities, technical and administrative feasibility, monitoring, and no shift of risk burden.[129] In an attempt to give more guidance and to increase participation in the program,[130] the EPA issued a Notice of Modification in 1997 emphasizing that three out of the eight criteria are key project elements in deciding whether to approve an XL proposal: achieving superior environmental performance, transferability to other projects, and adequate opportunity for stakeholder involvement.[131]

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124. *See generally* Susan Bruninga & Allison Meyer, *"Reinvention" Top EPA Priority*, 26 ENV'T REP. 1889-90 (1996); William H. Freedman & Karen A. Chaffee, *EPA's Project XL: Regulatory Flexibility*, 10 NAT. RESOURCES & ENV'T 59 (1996); Beth S. Ginsberg & Cynthia Cummis, *EPA's Project XL: A Paradigm for Promising Regulatory Reform*, 26 ENVTL. L. REP. 10,059 (1996); Mank, *supra* note 32, at 19; Scagnelli, *supra* note 109, at 585.

125. Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. 27,282, 27,283 (May 23, 1995).

126. *See* Mank, *supra* note 32, at 24-30 (pointing out that one of the Project's problems is uncertainty because the existing statutory requirements are based on a single medium approach that at best ignores and at worst forbids multimedia regulatory approaches); NAPA REPORT 1997, *supra* note 87, at 19 (stating that applicants to the XL project feel constrained by existing statutes and the threat of citizen suits).

127. Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. at 27,288.

128. To determine whether a project achieves superior environmental performance, the EPA uses a two-tiered assessment: First, it develops a quantitative baseline estimate of what would have happened to the environment absent the project, then compares that baseline estimate against the project's anticipated environmental performance. Second, the EPA considers both quantitative and qualitative measures in determining if the anticipated environmental performance will produce a level superior to the baseline. *See* Regulatory Reinvention (XL) Pilot Projects: Notice of Modification to Project XL, 62 Fed. Reg. 19,872, 19,874 (Apr. 23, 1997).

129. Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. at 27,287.

130. In April 1997, the EPA approved three XL projects for implementation, proposed approval of a fourth, and was developing ten additional projects. Regulatory Reinvention (XL) Pilot Projects: Notice of Modification to Project XL, 62 Fed. Reg. at 19,873.

131. *Id.* at 19,872.

Project XL, therefore, is not primarily concerned with fostering an integrated approach. However, one out of the eight criteria encourages the participating entities to engage in an undefined, innovative multimedia management practice.[132] Several of the fifty projects that were finally approved by the EPA, moreover, show that permit innovations adopted elements of an integrated approach.[133]

As for substantive integration, two different approaches can be identified. On the one hand, there are projects such as Intel's Chandler facility,[134] Anderson Windows,[135] 3M in Minnesota,[136] and Merck's Stonewall Plant,[137] which implement process-level or facility-wide emission caps. These permits preauthorize certain types of changes or

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132. Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. at 27,287 (failing to define the term multimedia strategy but merely describing it as strategy affecting more than one environmental media). *See generally* NAPA REPORT 1997, *supra* note 87, at 12 (evaluating Project XL as a loosely defined experiment providing only limited guidance).

133. *See generally* the alphabetical list of all approved XL projects, *available at* http://www.epa.gov/projectxl/projects.htm (last updated Oct. 4, 2001).

134. Intel is implementing an Environmental Management Master Plan that includes a facility wide cap on air emissions to replace individual permit limits for different air emission sources at its Chandler facility in Arizona. The agreement substitutes the case by case review of specific manufacturing process changes if emissions remain under a capped amount, and pre-approves major plant expansions if emissions remain below a capped amount for the entire site. *See generally* U.S. EPA, PROJECT XL PROGRESS REPORT INTEL CORPORATION (2001), EPA doc. 100-R-00-031, *available at* http://www.epa.gov/projectxl/intel/index.htm.

135. The Andersen Corporation Final Project Agreement for the Bayport facility in Minnesota introduces production based emission measure units and establishes caps on the emission of volatile organic compounds. It gives the Andersen Corporation the flexibility to modify and add pre-approved emission sources without additional review by EPA or Minnesota. *See generally* U.S. EPA, PROJECT XL PROJECT PROGRESS REPORT, ANDERSEN CORPORATION (1999), EPA doc. 100-R-00-016, *available at* http://www.epa.gov/projectxl/andersen/index.htm; U.S. EPA, Andersen Corporation: Proposed Rule and Request for Comments on Draft Final Project Agreement, 64 Fed. Reg. 74 (Apr. 19, 1999) (to be codified at 40 C.F.R. 52).

136. 3M proposed a project which would allow for performance-based permits, establish emission caps below existing regulatory limits, develop a single, simplified multimedia permit, and implement a simplified reporting system and an Environmental Management System verification process for its Hutchinson Minnesota facility. However, the project Agreement was not executed. *See generally* Project Overview, *at* http://www.epa.gov/projectxl/3mhut/index.htm (last updated Dec. 1, 1999).

137. Merck & Co. agreed in the Final Project Agreement to limit or cap certain pollutant emissions of its pharmaceutical manufacturing facility in Elkton, Virginia below recent actual levels. In exchange, Merck will no longer need to obtain approval from the EPA or the Virginia Department of Environmental Quality for any changes at the facility that cause emission increases as long as Merck's emissions remain below the cap. *See generally* Notice of Proposing Site Specific Rule to Implement Merck XL Project, 62 Fed. Reg. 15,304 (Mar. 31, 1997); Notice of Final Site Specific Rule to Implement Merck XL Project, 62 Fed. Reg. 52,621 (Oct. 8, 1997); Notice with Delegation to the Commonwealth of Virginia, 62 Fed. Reg. 62,594 (Nov. 24, 1997); U.S. EPA, PROJECT XL PROGRESS REPORT MERCK STONEWALL PLANT (2001), EPA doc. 100-R-00-034, *available at* http://www.epa.gov/projectxl/merck/index.htm; U.S. EPA PROJECT XL PROJECT FACT SHEET MERCK STONEWALL PLANT (1998), EPA doc. 100-F-98-020, *available at* http://www.epa.gov/projectxl/merck/0998.htm.

modifications within the process or facility as long as the total emissions remain below the caps established by the permit.[138] This gives the participating entities substantial operational flexibility to make fast changes in their production processes according to their economic needs without having to engage in time-consuming permit reviews.[139] Even though the new permits do not focus on a single source but rather on all sources within a process or a facility, they remain single medium oriented. Thus, those permits do not achieve substantive integration.

On the other hand, there are examples which employ a so-called "multimedia permit." Under the Jack M. Berry Co. Final Project Agreement (FPA), Berry will prepare a Comprehensive Operating Permit (COP) in partnership with the Florida Department of Environmental Protection, the South Florida Water Management District, and the EPA, which consolidated twenty-three federal, state, and local environmental permits related to air quality, water quality, and consumptive use regulations into one single manual for the facility.[140] Another example can be found in the Lucent FPA, which provided a transition "from a medium specific regulatory system, governed by individual permits to a holistic multimedia management system."[141] A multimedia approach can

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138. HELMS ET AL., *supra* note 114, at 72-74 (stressing that in the case of Intel it is not the permit which gives flexibility but the Final Project Agreement).

139. *Id.* (pointing out that in the Intel Chandler facility's first year of operation under the new system, the new permit eliminated thirty to fifty permit reviews, avoiding millions of dollars' worth production delay for the company).

140. Jack M. Berry Inc., a medium-size citrus juice processing company, which operates a facility in La Belle, Florida, signed the FPA on August 8, 1996, and was the first XL pilot project approved by the EPA. However, in 1997, through a lease agreement, Cargill, Inc. became the new operator of the facility. Cargill, Inc. will hold the lease for five years and has an option to purchase the plant. As a consequence, the COP development was put on a hold. After further progress on the COP development appeared unlikely, the State of Florida finally chose to terminate the agreement on June 2, 1999. *See generally* U.S. EPA, PROJECT XL FACT SHEET JACK M. BERRY, INC. (1998), EPA doc. 100-R-98-017, *available at* http://www.epa.gov/projectxl/berry/0998.htm; U.S. EPA, PROJECT XL PROGRESS REPORT JACK M. BERRY, INC. (1999), EPA doc. 100-R-99-004, *available at* http://www.epa.gov/projectxl/berry/index/htm.

141. The Microelectronics Group of Lucent Technologies, Inc. designs and manufactures integrated circuits and optoelectronic components for the computer and communications industries. Lucent has been operating a third-party certified ISO 14001 Environmental Management System (EMS) since 1997. The Lucent FPA, which was signed August 19, 1998, tests site-specific flexibility for the Lucent facilities in Allentown, Pennsylvania; Reading, Pennsylvania; Breinigsville, Pennsylvania; and Orlando, Florida. The ultimate goal is to use the EMS as a platform from which the company can, over time, consolidate all federal and state permits for its domestic facilities into a single company wide multimedia permit. The Lucent XL project will be implemented over a five year period through site-specific demonstration projects. *See generally* U.S. EPA, PROJECT XL, PROJECT FACT SHEET: LUCENT TECHNOLOGIES, INC. (1998), EPA doc. 100-F-98-011, *available at* http://www.epa.gov/projectxl/lucent/06_1998.htm; U.S. EPA, PROJECT XL, PROGRESS REPORT LUCENT TECHNOLOGIES, INC. (1999), EPA doc. 100-R-00-012, *available at* http://www.epa.gov/projectxl/lucent/index.htm; Notice of Availability of Lucent

also be observed in the case of Steele County Community, which provides for the use of environmental permitting based on overall community performance, rather than individual member performance, in the areas of air emissions, solid waste reduction, hazardous waste reduction, chemical storage, and community sustainability.[142] These examples demonstrate that the term multimedia permit can characterize the incorporation of several different permits in a single document. Because the multimedia permits do not stipulate any kind of multimedia balancing, the approach can be qualified as an additive multimedia permit.[143]

Project XL also entailed other innovations concerning the procedural dimension of integration. Under the Intel FPA, for example, the project produced an agreement that allowed Intel to submit a consolidated environmental report instead of separate reports for air, water, and waste.[144] In addition, the Arizona Department of Environmental Quality (ADEQ) acted as the coordinating agency for Intel's Chandler facility.[145] However, the coordinating function of ADEQ only applied to maintaining the public records and the implementation of the FPA.[146] The Merck FPA, however, went one step further, establishing a three-tiered consolidated set of reporting requirements, with increased reporting requirements accompanying increased emission levels.[147]

The XL projects demonstrate some innovations with regard to organizational integration. Although XL projects did not change the

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Project XL Final Project Agreement and Related Documents, 63 Fed. Reg. 47,022 (Sept. 3, 1998); Notice of Availability of Lucent Project XL Draft Umbrella Final Project Agreement and Related Documents, 63 Fed. Reg. 35,212 (June 29, 1998).

142. The Steele County XLC Project, a group of private sector facilities in Owatonna and Blooming Prairie, Minnesota, have proposed a community-wide project consisting of a two phased approach. Phase I addresses industrial regulated wastewater effluent reductions, and at the same time concentrates on significant water use reduction. Phase II will expand the project to a multimedia approach to environmental permitting. *See generally* U.S. EPA PROJECT XL COMMUNITIES FACT SHEET: STEEL COUNTY (2000), EPA doc. 100-F-00-015, *available at* http://www.epa.gov/projectxl/steele/index.htm; Community XL (XLC) Site Specific Rulemaking for Steele County, MN, 65 Fed. Reg. 59,738 (Oct. 6, 2000); Notice of Availability of Steele County Project XL for Communities (XLC) Draft Final Project Agreement, 64 Fed. Reg. 73,047 (Dec. 29, 1999).

143. *See* discussion of the term, *supra* Part II.C.1.

144. U.S. EPA PROJECT XL PROGRESS REPORT INTEL CORPORATION (1999), EPA doc. 100-R-00-005, *available at* http://www.epa.gov/projectxl/intel/index.htm.

145. Intel Final Project Agreement, Part II., I. 2., *available at* http://www.epa.gov/projectxl/intel/111996.htm (last updated Dec. 11, 1999).

146. *Id.* Part II., I. 2. a. b.

147. *See* HELMS ET AL., *supra* note 114, at 70-72.

permitting competence of any agency involved under the existing statutory framework, many projects employed a coordinating agency.[148]

B. Adoption of the Integrated Approach on the State Level

States are, of course, key actors in the environmental arena,[149] and numerous states have launched initiatives to streamline and reform their permitting processes.[150] The approaches taken by the states differ significantly.

1. New Jersey's Facility-Wide Permit Program

New Jersey began experimenting with integrated permitting in the early 1990s.[151] As a result of these early efforts, the state's facility-wide permit (FWP) pilot project became the first permit innovation program in the United States to issue binding multimedia permits.[152] Given the rich history of the New Jersey program, it provides an excellent example to explore integrated permitting in more detail.

The New Jersey facility-wide permit pilot project was launched with the enactment of the New Jersey Pollution Prevention Act in 1991,[153] which provided for an industrial pollution prevention planning program within the New Jersey Department of Environmental Protection (NJDEP).[154] Under the mandatory planning requirement, approximately

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148. *See* Intel Final Project Agreement, *supra* note 145, Part II., I. 2.

149. Paul R. Portney, *Overall Assessment and Future Directions*, *in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 275 (Paul R. Portney ed., 1993) (stating that the most interesting environmental initiatives have arisen at the state level).

150. Barry G. Rabe, *Permitting, Prevention, and Integration: Lessons from the States*, *in* ENVIRONMENTAL MANAGEMENT, PERFORMANCE MEASUREMENT 2 (Donald F. Kettl ed., 2001).

151. *See generally* HELMS ET AL., *supra* note 114, at 1; Barry G. Rabe, *Facilitywide Permits and Environmental Regulatory Integration: Lessons from New Jersey*, 12 ENVTL. ENFORCEMENT J. 3-5 (Apr. 1997); Scagnelli, *supra* note 109, at 589.

152. HELMS ET AL., *supra* note 114, at 1-9; Rabe, *supra* note 151, at 3-5 (pointing out that New Jersey developed an array of ambitious regulatory programs as a response to the particular situation of the state characterized by population density, diversity, concentration of industry, and legacy of environmental degradation).

153. Pollution Prevention Act, N.J. STAT. ANN. §§ 13:ID-35—50 (West 1991). *See generally* Susan W. Schuler, *New Jersey's Pollution Prevention Act of 1991: A Regulation That Even the Regulated Can Enjoy*, 16 SETON HALL LEGIS. J. 814 (1992); NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF POLLUTION PREVENTION AND PERMIT COORDINATION, NEW JERSEY POLLUTION PREVENTION PLAN SUMMARY, REVISED INSTRUCTIONS (2000), *available at* http://www.state.nj.us/dep/opppc.; NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF CHEMICAL RELEASE, NEW JERSEY POLLUTION, RELEASE AND POLLUTION PREVENTION REPORT (1999).

154. N.J. STAT. ANN. § 13:ID-41. *See generally* Thomas R. Mounteer, *The Inherent Worthiness of the Struggle: The Emergence of Mandatory Pollution Prevention Planning as an*

600 manufacturing businesses[155] had to conduct an assessment and systematic exploration of hazardous substance flows[156] at their facilities and develop a pollution prevention plan for targeted processes.[157] A key feature of the assessment required the description and quantification of nonproduct outputs (NPO), defined as all hazardous substances or hazardous waste generated prior to storage, out of process recycling, treatment, control or disposal, and that are not intended for use as a product.[158] It is, essentially, a measure of the loss of materials from a production process, and can be a useful indicator of progress in pollution prevention.[159]

Although the primary result of the New Jersey Pollution Prevention Act was an industrial planning program, it also introduced the FWP project to fifteen designated facilities[160] and aimed at testing a comprehensive multimedia permit.[161]

The legislation creating the Act recognized that "the traditional system of separately regulating air pollution, water pollution, and hazardous waste management constitutes a fragmented approach to environmental protection and potentially allows pollution to be shifted from one environmental media to another."[162] It sought to "transform the current system of pollution control to a system of pollution prevention."[163]

Environmental, Regulatory Ethic, 19 COLUM. J. ENVTL. L. 251, 286-92 (1994); HARRY M. FREEMAN, INDUSTRIAL POLLUTION PREVENTION HANDBOOK (1995).

155. Current number given by the State of New Jersey, Department of Environmental Protection, Office of Pollution Prevention and Permit Coordination, *available at* http://www.state.nj.us/dep/opppc/back.htm; *contra* Rabe, *supra* note 151, at 5 (pointing out that the Pollution Prevention Act mandatory planning requirement affected 850 facilities in New Jersey). The Pollution Prevention Act only applies to those industrial facilities large enough to be required to submit a Toxic Substances Release Inventory (TRI) reporting Form R to the United States Environmental Protection Agency under 42 U.S.C. § 11023 (1994); *compare* N.J. ADMIN. CODE tit. 7, § 1K-3.1(a) (1994).

156. The planning requirement relates only to those hazardous substances under 42 U.S.C. § 11023 (1994) that are used or manufactured in quantities of 10,000 pounds or more; *compare* N.J. ADMIN. CODE tit. 7, § 1K-3.4(a) (1994).

157. *See* Rabe, *supra* note 151, at 4-5.

158. N.J. ADMIN. CODE tit. 7, § 1K-1.5 (1994); NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, INDUSTRIAL POLLUTION PREVENTION—TRENDS IN NEW JERSEY 2 (1996), *available at* www.state.nj.us/dep/oppc/trend.htm.

159. NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, *supra* note 158, at 2.

160. N.J. STAT. ANN. § 13:ID-48 (West 1991); *see also* HELMS ET AL., *supra* note 114, at 21-23 (providing a list of all participating companies in the FWP project).

161. N.J. STAT. ANN. § 13:ID-41.

162. *Id.* § 13:ID-36.

163. *Id.*

A facility-wide permit is defined by the Act as a single permit that incorporates all previous permits *and* a pollution prevention plan.[164] The crucial difference from traditional permits is that an FWP stipulates emission limits based on industrial processes and not on single sources. Therefore, it incorporates the process data collected during the planning process. In addition, and contrary to traditional air permits, emission limits are set for categories of substance rather than for specific chemicals.[165]

It is important to understand that, despite the name, an FWP is really process-based, with process-level caps rather than truly "facility-wide" regulation.[166] Still, these caps allow firms to engage in internal emissions trading within industrial processes.[167] Thus, an FWP provides companies with operational flexibility within a production process and negates the need for prior approval for each change in the process unless the cap is exceeded.[168] Process change within the cap only requires notice to the DEP within 120 days of the change.[169]

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164. A single permit issued by the New Jersey Department of Environmental Protection to the owner or operator of a priority industrial facility incorporates the permits, certificates and registrations, or other relevant department approvals previously issued to the owner or operator of the priority facility pursuant to the Solid Waste Management Act, N.J. STAT. ANN. § 13:1E-1, the Water Pollution Control Act, N.J. STAT. ANN. § 58:10A-1, the Air Pollution Control Act, N.J. STAT. ANN. § 26:2C-1 and the appropriate provision of the pollution prevention plan developed by the owner or operator of the priority facility pursuant to N.J. STAT. ANN. § 13:1D-41, -42. N.J. ADMIN. CODE tit. 7, § 1K-1.5 (1994).

The FWP replaces air permits, permits for discharges to surface water, groundwater and publicly owned treatment works, water treatment works approvals, hazardous waste facility permits, recycling notifications for hazardous wastes and hazardous waste accumulation approvals; *compare* N.J. ADMIN. CODE tit. 7, § 1K-1.5.

165. Such categories are, e.g., particulates, volatile organic compounds (VOCs); HELMS ET AL., *supra* note 114, at 56 (arguing that caps by category provide an additional source of flexibility).

166. For small facilities having only one process, the term facility level and process level might be identical. However, in large industrial plants, for example the Degussa Corporation, thirty-four different processes were identified. The average number of processes at facilities is eleven. *See* HELMS ET AL., *supra* note 114, at 26-29, 31-32 (identifying three different types of caps levels: source level caps, process level caps, and facility-wide caps).

167. HELMS ET AL., *supra* note 114, at 52-54; *contra* NAPA REPORT 2000, *supra* note 103, at 54 (citing Helms incorrectly for the proposition that the FWP allows trading of emissions within their facility).

168. *See* HELMS ET AL., *supra* note 114, at 54-55 (pointing out to the example of Schering Corporation which typically has made ten to fifteen changes in its processes per year requiring time consuming (up to a year) permit modifications).

169. *Id.* at 54-56.

Also, despite the name, FWPs are not truly multimedia; they set no multimedia caps.[170] Rather, caps under the FWP program are solely based on a single medium, primarily air.[171] Therefore, its "integration" is limited to the fact that previously different permits are incorporated into a single document.[172] It therefore constitutes an additive multimedia permit.[173] Some agency staff, in fact, regarded the FWP not as a substantive improvement over traditional permits, but as a "stapling exercise."[174] Others thought it more accurate to refer to it as a "facility-wide air permit."[175]

Although the terms "facility-wide permit" and "multimedia permit" are slightly misleading, the FWP project produced some (remarkable) results.[176] The process did, in fact, identify some cross-media shifts. In one case, a facility employed "strippers" to remove volatile organic compounds (VOCs) from an air stack. The water discharges from the strippers were sent to a local treatment plant, but the treatment plant then employed an open catch basin from which most of the VOCs were simply evaporating back into the air.[177] Such examples highlight the core concern for integrated permitting and demonstrate the pollution-shifting potential of traditional permitting.[178] This example further demonstrates the value of the process of the FWP program. Instead of considering plants as a checklist of single sources, plant environmental managers (and regulators) started understanding the plants as a series of processes and material flows.[179] Significantly, the FWP project uncovered a number

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170. *Id.* at 26-28 (noting that multimedia caps would provide greater flexibility, but they would also be difficult to set because of the different types of risks introduced by the same chemical in different media).

171. *See id.* at 25-27 (stating that process levels for water and hazardous waste are not feasible because on the one hand, water discharge limits are generally set at the facility level, and on the other hand, there is no statutory basis for setting limits on hazardous waste generation).

172. As to the implications with regard to the procedural dimension of integration, see *infra* note 184 and accompanying text.

173. *See* discussion of the term, *supra* Part II.C.1.

174. Out of eleven issued FWPs, five incorporated air permits only and four included water and air permits. Only two involved other permits: one replaced a hazardous waste storage permit and one a water allocation permit. *See* HELMS ET AL., *supra* note 114, at 25-27, 52 (stressing that this view was particularly held by the staff supervising water and hazardous waste, because the FWP did not significantly change the water or waste permits).

175. HELMS ET AL., *supra* note 114, at 25-27.

176. *See* NAPA Report 2000, *supra* note 103, at 55 (stating that the New Jersey permits are more conservative than those envisioned by Wisconsin and Oregon).

177. HELMS ET AL., *supra* note 114, at 51-53.

178. *See* discussion, *supra* Part II.B.

179. HELMS ET AL., *supra* note 114, at 51.

of previously unregulated sources in the targeted plants.[180] But it is interesting to note that the outcome was a more "integrated" way of considering the permit process, rather than of an "integrated permit" requiring multimedia caps.[181]

The FWP program also managed some concentrations of procedures that could be considered a type of integration. Although it did not achieve concentration with regard to reporting requirements, it did create a consolidated application process.[182] It required only a single administrative permit application, replacing six different categories of permits.[183] However, some participants complained that the new process turned out to be more complex and time-consuming than originally anticipated.[184] And despite the consolidated application process, the legal and technical review within the DEP was still done by its various departments with responsibility only for a single media.[185]

The FWP did establish procedural integration in the sense of a single contact person at the Office of Pollution Prevention with responsibility for all consultations with the permittee on regulatory issues. The participants considered this a major benefit of the program.[186]

In sum, the FWP has made significant steps toward procedural integration of the permitting process by introducing an additive multimedia permit and consolidating the application process. It also generated a degree of substantive integration by identifying pollution transfers between media in some cases.

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180. Rabe, *supra* note 151, at 17 (pointing out that at a Frigidaire Company plant, fifty-seven emission sources were found which had never been regulated before in any manner).

181. NAPA REPORT 2000, *supra* note 103, at 54 (noting that firms reduced emissions in facilities, not necessarily because of the integrated permit, but because of what they learned in the process of developing the permit).

182. HELMS ET AL., *supra* note 114, at 56-59 (stating that while the Pollution Prevention Office's original intent was to decrease the reporting burden for FWP facilities, the FWP led to a net increase in reporting for a number of them).

183. *See* N.J. ADMIN. CODE tit. 7, § 1K-1.5 (1994).

184. HELMS ET AL., *supra* note 114, at 24-26 (pointing out that although the primary responsibility for completing the application lay with the facility's environmental managers, the permit writers provided constant assistance and feedback, turning the FWP application into an arduous process which often lasted more than three years).

185. *Id.*

186. *Id.* at 55-57 (quoting a staff member of one of the participating facilities who complained that prior to the institution of the FWP program he often would "spend five days on the phone just trying to find the right person to talk to" or "get someone different every time I called and have to start over").

2. Louisiana's Reengineered Department of Environmental Quality

In 1997, the Louisiana Department of Environmental Quality (DEQ) undertook an effort known as "Business Process Reengineering." The basic goals of this effort were to achieve increased effectiveness and efficiency of the DEQ.[187] In a three-tiered process, the department sought to change both the way it conducts business (with respect to managing the environment) and the way it provides services to its "stakeholders."[188]

After an initial phase of interviews with stakeholders, the executive staff decided to redesign various processes within DEQ, including strategic planning, permitting, enforcement and remediation, and to change its organizational structure.[189] Contrary to its past organization around specific media, the new structure is centered around key processes.[190] In addition to previously existing Office of the Secretary and Office of Management and Finance, the department created an Office of Environmental Services (with divisions of Environmental Assistance and Permitting), an Office of Environmental Compliance (with divisions of Surveillance and Enforcement), and Office of Environmental Assessment (with divisions of Planning, Evaluation, Technology, and Remediation).[191] The reengineered DEQ also provides for a new multimedia approach and the assembling of personnel trained teams in single medias to cope with multimedia issues.[192]

Although the efforts of reengineering within the Louisiana DEQ entailed a substantive change in the organizational structure, the degree of integration remains rather modest. The reengineered DEQ does not provide for substantive integration. The multimedia approach used by the DEQ lacks a holistic multimedia assessment. As to procedural integration, the thrust of the reengineered DEQ is limited to the establishment of a single point of contact within the DEQ and the implementation of an Integrated Data Management System that allows the department, inter alia, to consolidate its data concerning permitting,

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187. *See* LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY: FACT SHEET—THE RE-ENGINEERED LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY 1 (2000), *at* http://www.deq.state.la.us/organization/reengineereddeq.htm [hereinafter RE-ENGINEERED DEQ].

188. Stakeholder is defined as anyone who has an interest in DEQ including private citizens, the regulated community and DEQ employees. RE-ENGINEERED DEQ, *supra* note 187, at 1.

189. *See id.*

190. *Id.*

191. *Id.* at 2.

192. Under the process of reengineering, another alternative to implementing a multimedia approach is to improve multimedia skills in individual employees. *See id.* at 9.

surveillance, enforcement, and remediation in a single system.[193] In addition, the reengineered DEQ does not accomplish organizational integration because it did not consolidate the statutory scheme of competences for air, water and land. Reengineering merely replaced the organization focused on specific media with organization focused on key processes (service, compliance, assessment). However, this overall result does not come as a surprise given the fact that the reengineering process was driven by concerns of efficiency and effectiveness rather than by demands for integration or a holistic understanding of the environment.

3. Massachusetts' Environmental Results Program

The Environmental Results Program (ERP)[194] was developed in 1996 by the Massachusetts Department of Environmental Protection (DEP) to streamline permits through a facility-wide, performance-based self-certification program, and originally designed for three industrial sectors: dry cleaners, photo processors, and commercial printers.[195] The Massachusetts ERP is a sector-based program under the EPA's Project XL and is aimed at small- and medium-sized companies. The program's goals are to "reduce the resources expended by both the DEP and industry in the permitting process, as well as to improve compliance by offering companies flexibility in pollution prevention."[196]

The ERP has two key elements. The first is to eliminate and reduce the number of state permits by converting traditional state-permit[197]

193. The Integrated Data Management System consists of five different elements: Document Management System (replacing paper documents and files); Labworks Enterprise (Labratory Management System for the Air and Water Laboratories); Terrabase (analytical/validation data base system), Tempo (Tools for Environmental Management and Protection Organizations), Enhanced Global Positioning System Capabilities. *See id.* at 10.

194. *See generally* PROJECT XL FINAL PROJECT AGREEMENT FOR THE MASSACHUSETTS ENVIRONMENTAL RESULTS PROGRAM (1998), *available at* http://www.epa.gov/projectxl/massdep/index.htm [hereinafter PROJECT AGREEMENT]; U.S. EPA, PROJECT XL FACT SHEET MASSACHUSETTS ENVIRONMENTAL RESULTS PROGRAM (1998), EPA doc. 100-F-98-025, *available at* http://www.epa.gov/projectxl/massdep/index.htm [hereinafter FACT SHEET]; U.S. EPA, PROJECT XL PROJECT PROGRESS REPORT MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (1999), EPA doc. 100-R-00-013, *available at* http://www.epa.gov/projectxl/massdep/index.htm [hereinafter PROGRESS REPORT]; Susan April & Tim Greiner, *Evaluation of the Massachusetts Environmental Results Program*, *in* NAPA REPORT 2000, *supra* note 103, at 34.

195. FACT SHEET, *supra* note 194, at 1 (stressing that after evaluation and revision, the program may be transferred to other industry sectors throughout Massachusetts and also other states).

196. *Id.*

197. *See* April & Greiner, *supra* note 194, at 33-37 (pointing out that the federal/state relationship created barriers to flexibility).

requirements into an industry-wide performance standard.[198] However, this task turned out to be more difficult than originally expected, and the ERP did not eliminate a large number of permits.[199] The ERP also emphasizes pollution prevention and incorporates pollution prevention practices into performance standards.[200] The second key element of the program is the use of annual self-certification which requires senior-level company officials to certify that they are in compliance with the air, water and hazardous waste performance standards.[201]

Although ERP is an innovative program, it does not constitute a significant step toward integration. The ERP demonstrates procedural integration insofar as it converts state-permit requirements into a performance-based self-certification program. However, the adopted performance standards for water, air, and hazardous waste are still single-media oriented, and therefore lack substantive integration. The ERP program primarily looks at the regulated sectors as a whole.[202] Similarly, the efforts to incorporate pollution prevention remain somewhat vague because pollution prevention is incorporated only where appropriate.[203]

4. Efforts in Other States

Like New Jersey, New York began experimenting with multimedia approaches in the early 1990s.[204] Two innovations within New York's Department of Environmental Control (DEC) are of particular interest.

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198. Contrary to strict technology-based standards, performance standards do not prescribe the technology or technique the facility has to use to stay within limits. APRIL & GREINER, *supra* note 194, at 1.42.

199. *See id.* at 1.41-1.42 (stating that the adopted standards were a mix of performance and technology-based standards. The development of pure performance standards was challenged by the reluctance of the DEP to relinquish the technology-forcing standard, the reluctance of the industry to accept performance standards rather than technology standards, and the difficulty of making standards compatible with federal requirements).

200. PROJECT AGREEMENT, *supra* note 194, at 4 (pointing out examples of pollution prevention under the ERP: photo processors and printers that discharge or ship wastewater to publicly owned treatment works have to install silver recovery units; printers have to use clean up solutions which are either low in volatile compounds (VOCs) or low in evaporation rate; screen and flexographic printers that emit greater that one ton VOCs per year have to use low VOC inks; area-source dry cleaners have to replace transfer machines installed after September 1993 with dry-to-dry machines and carbon absorbers installed after that date with refrigerated condensers).

201. FACT SHEET, *supra* note 194, at 2.

202. *See* PROJECT AGREEMENT, *supra* note 194, at 7-8 (stating that it will improve industry wide compliance by giving the DEP a far better understanding of the regulated universe as a whole).

203. *Id.* at 4 (listing dry cleaners and printers).

204. *See generally* David L. Markell, *States as Innovators: It's Time for a New Look to Our "Laboratories of Democracy" in Our Efforts to Improve Environmental Regulation*, 58 ALB. L. REV. 347, 368 (1994).

First, in 1992, the DEC altered its institutional structure to improve its ability to cope with environmental concerns in a more comprehensive manner.[205] The New York DEC established a Multimedia Pollution Prevention Unit whose task was to coordinate single-media programs.[206] Second, in 1994, a multimedia inspection program was launched[207] to examine targeted facilities and to conduct multimedia pollution prevention evaluations.[208] In sum, the New York DEC efforts are strongly oriented towards integration. However, the organizational integration does not change the permitting authority of the different offices, it merely adds an additional unit to the department to improve coordination.

A completely different approach can be observed in Pennsylvania. To accelerate permit decisions, Pennsylvania launched a Money-Back Guarantee Program in 1995.[209] The program establishes deadlines for the Pennsylvania Department for Environmental Protection (DEP) to review permit applications and offers a full refund of permit fees in case the deadlines are not met.[210]

In 1994, Oklahoma enacted a Uniform Permitting Act, which reformed the permit implementation procedure by introducing three new categories of permits.[211] The new permits provide an increasingly thorough review process and public participation depending on the level of risk imposed by the activity at issue.[212] In addition, the Oklahoma Department of Environmental Quality (DEQ) created a Customer Service Division which, inter alia, provides extensive "customer assistance" programs to streamline permits and speed up the decision process.[213] As Barry Rabe has observed, "permit streamlining in Oklahoma is thus seen as a central tool to facilitate economic development."[214]

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205. *Id.* at 368-70.

206. *Id.* at 369.

207. The New York DEC determined 400 facilities which release toxic substances as targeted facilities under the Multimedia Pollution Prevention Initiative. *Id.* at 371-72.

208. "The multimedia inspection program is intended to result in several important advantages: No significant problems are overlooked. The relationship among releases become well understood. Releases into one medium are not shifted to another medium with little or no overall improvement." *Id.* at 373-74 (quoting Pollution Prevention Unit, New York State Dep't of Envtl. Conservation, Technical Administrative Guidance Memorandum No. 8010-93-06: The Multi-Media Inspection Model (Jan. 19, 1994) (alterations omitted)).

209. Rabe, *supra* note 150, at 7-8.

210. *Id.* at 8.

211. *Id.* at 6-7.

212. *Id.* at 6.

213. *Id.*

214. *Id.* at 7.

5. Summary

Examining the efforts to reform the permitting procedures and processes at the state level reveals two different trends. On the one hand, states such as Louisiana, Oklahoma, and Pennsylvania integrate their permitting procedures to improve their operational efficiency, but their efforts to streamline permits is mainly driven by concerns of economic development.[215] On the other hand, several states recognize integration as a substantive issue and have attempted to adopt pollution prevention or multimedia programs to foster environmental gains, with varying degrees of success. Examples of the latter are New Jersey, New York, and Massachusetts.

IV. INTEGRATED POLLUTION CONTROL IN THE EUROPEAN UNION

European environmental regulation, like its U.S. counterpart, is strongly dominated by media specific legislation with regard to integration.[216] Yet there are some efforts at integration.[217] The most notable effort is the Integrated Pollution Prevention and Control Directive (IPPC).[218] However, long before the adoption of the IPPC Directive, ideas of integration were already embodied in the Environmental Action Programmes of the European Union.[219]

A. Environmental Action Programmes

Although the European Union's Environmental Action Programmes are not legally binding, they do set forth the policy goals of the Union.[220] The Third Environmental Action Programme of 1983 included integrated approaches for the first time by calling for coordination of sector specific actions to prevent cross-media shifting of pollution.[221] The Commission was assigned the task of developing instruments for the holistic control

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215. *See id.* at 30-31 (expressing doubts that many states are prepared to step up to the challenge of integration and prevention in serious ways).

216. *See generally* Jan H. Jans, *The Relationship Between the IPPC Directive and Other EC Environmental Law*, *in* INTEGRATED POLLUTION PREVENTION AND CONTROL, THE EC DIRECTIVE FROM A COMPARATIVE LEGAL AND ECONOMIC PERSPECTIVE 43 (Chris Backes & Gerrit Betlem eds., 1999).

217. *See* Council Directive 85/337, 1985 O.J. (L 175) 40; Council Directive 90/313, 1990 O.J. (L 158) 56; Council Regulation 880/92, 1992 O.J. (L 99) 1; Council Regulation 1836/93, 1993 O.J. (L 168) 1.

218. Council Directive 96/61, 1996 O.J. (L 257) 26.

219. Schröder, *supra* note 10, at 482.

220. Kloepfer, *supra* note 11, at 562.

221. Third Environmental Action Programme, 1983 O.J. (C 46) 3.

of pollutants.[222] The Fourth Environmental Action Programme continued the promotion of cross-media pollution prevention by introducing the term "integrated approach"[223] requiring integrated monitoring and integrated risk analysis covering all environmental media.[224] Under the Fifth Environmental Action Programme,[225] "integrated pollution control" was seen as an important part of "the move towards a more sustainable balance between human activity and socio-economic development . . . and the resources and regenerative capacity of nature."[226]

In sum, the Environmental Action Programmes of the EU have promoted integrated approaches from a policy perspective, but the policy statements are somewhat vague. More important are the legislative acts implementing the policy.

B. The IPPC Directive

1. Objectives and Scope

The IPPC Directive[227] constitutes a significant step in the shift from single-medium to multimedia legislation in the European Union.[228] The directive lays down common rules for a uniform system of permitting for large industrial installations of six industrial sectors: energy industry, production and processing of metals, mineral industry, chemical industry, waste management, and other activities.[229] Based on the recognition that

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222. *Id.* at 8.

223. Fourth Environmental Action Programme (1987-1992), Section 3, 1987 O.J. (C 328) 5, 17-21.

224. *Id.*

225. Fifth Environmental Action Programme, 1993 O.J. (C 138) 5-80.

226. Council Directive 96/61, O.J. (L 257) 26. *See* Fifth Environmental Action Programme, 1993 O.J. (C 138) 24-25.

227. Council Directive 96/61, 1996 O.J. (L 257) 26.

228. *See* Neil Emmott, *An Overview of the IPPC Directive and Its Development*, *in* Backes, *supra* note 216, at 23. *See generally* Antoinette Long & Claudio Mereu, *Integrated Pollution Prevention and Control: The Implementation of Directive 96/61/EEC*, 8 EUR. ENVTL. L. REV. 180 (1999); Martina Doppelhammer, *More Difficult Than Finding the Way Round Chinatown? The IPPC Directive and Its Implementation*, 9 EUR. ENVTL. L. REV. 199 (2000); Harald Kracht & Andreas Wasielewski, *Integrierte Vermeidung und Verminderung der Umweltverschmutzung*, *in* HANDBUCH ZUM EUROPÄISCHEN UND DEUTSCHEN UMWELTRECHT 1070 (Hans-Werner Rengeling ed., 1998).

229. *See* Council Directive 96/61, Annex I, 1996 O.J. (L 257) 26, 34-36 (establishing threshold values for five of the six industrial sectors covered by the directive). Other activities covered by the IPPC Directive include industrial plants for the production of pulp and paper, dyeing of textiles, tanning of hides, large slaughterhouses, installations for disposal or recycling of animal carcasses and animal waste, milk processing plants, installations for the surface treatment of substances, objects or products using organic solvents where their capacity exceeds certain limits, installations for the production of carbon electrographite by means of incineration

"different approaches to controlling emissions into the air, water or soil separately may encourage the shifting of pollution between the various environmental media rather than protecting the environment as a whole,"[230] the directive established an integrated permit system for new[231] and existing[232] installations. It pursues an integrated approach through both its permitting procedure and its substantive permitting standards.

2. Coordination of Permitting Procedures

The IPPC Directive requires Member States to take measures to ensure that the procedures for granting a permit are fully coordinated.[233] However, the meaning of full coordination is controversial. Some scholars argue that, under the directive, Member States have to establish "one stop shopping" in the sense of a single permit system.[234] Yet the Commission does not want to impose a "one stop shop" system on the Member States.[235] Instead, the Commission applies a flexible approach by giving Member States as much freedom as possible. This means that Member States do not have to depart from a sectoral permitting system provided the procedures are sufficiently coordinated.[236] Thus, the thrust of procedural integration as required by the directive remains modest.[237]

3. Substantive Permitting Standards

As to the substantive standard under the IPPC Directive, the permit must meet two requirements. First, the permit issued by national

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or graphitization, and certain agricultural activities such as large installations for intensive rearing of pigs and poultry; Council Directive 96/61, Annex I, 1996 O.J. (L 257) 26, 36-37.

230. *Id.* at 26.

231. The requirements of the IPPC Directive apply to new installations from the end of October 1999. *See* Council Directive 96/61, art. 4, 1996 O.J. (L 257) 26, 30; Jürgen Kühling & Marc Röckinghausen, *Legislative Umstezungsdefizite und executive Schadensbegrenzung—Zur (in)direketen Wirkung der IVU-Richtlinie in Deutschland*, 114 DEUTSCHES VERWALTUNGSBLATT 1614 (1999) (discussing the direct application of the directive in German environmental law after the transposition period expired).

232. As to existing installations, the IPPC Directive provides for a transition period until Oct. 2007. *See* Council Directive 96/61, art. 5, 21, and 22, 1996 O.J. (L 257) 26, 30, 34.

233. *Id.* art. 7, at 30.

234. Emmott & Haigh, *supra* note 24, at 307.

235. Doppelhammer, *supra* note 228, at 202 (referring to H. Aichinger, Head of Unit XI.E.1 of the European Commission).

236. *Id.* at 202 (pointing out that the flexible approach goes back to the principle of subsidiarity).

237. Emmott, *supra* note 228, at 35 (expressing severe concerns that if proper weight is not given to the requirements of the IPPC Directive, "the objective of applying a holistic approach to industrial installations will be lost and the 'coordinated permit' may become little more than an assembly of medium-specific conditions attached physically together").

authorities of the Member States has to include six basic operator obligations.[238] The operator obligations, which constitute the cornerstone[239] of the IPPC Directive, require that installations are operated in such a way that:

> (a) all the appropriate preventive measures are taken against pollution, in particular through application of the best available techniques;
> (b) no significant pollution is caused;
> (c) waste productions is avoided . . . . [W]here waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment;
> (d) energy is used efficiently;
> (e) the necessary measures are taken to prevent accidents and limit their consequences;
> (f) the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.[240]

Second, under the IPPC Directive a permit must include emission limit values (ELVs)[241] for certain pollutants[242] based on best available technique (BAT).[243] The IPPC Directive defines BAT as:

> the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole:
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> . . . .

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238. *See* Council Directive 96/61, art. 9 (1), 1996 O.J. (L 257) 26, 30. The IPPC Directive stipulates further that "it shall be sufficient if Member States ensure that the competent authorities take account of the general principles . . . when they determine the conditions of the permit." Council Directive 96/61, art. 3, 1996 O.J. (L 257) 26, 29. The implications of this provision are controversial. *See* Kracht & Wasielewski, *supra* note 228, at 1084 (interpreting this provision as a clarification that Member States are allowed to transpose this provision not only by adopting binding general rules, but also by stipulating individual permit conditions). *But see* Klaus-Peter Dolde, *Die EG-Richtlinie über die Integrierte Vermeidung und Verminderung der Umweltverschmutzung—Auswirkungen auf das deutsche Umweltrecht*, *in* NEUE ZEITSCHRIFT FÜR VERWALTUNGSRECHT 313, 315 (1997) (considering this provision as a minimum standard for the permit which does not impose any residual obligation for the operator).

239. Long & Mereu, *supra* note 228, at 181; *see also* Doppelhammer, *supra* note 228, at 201 (considering the basic operator obligations as the material part of the integrated approach).

240. Council Directive 96/61 art. 3, 1996 O.J. (L 257) 26, 29.

241. *See id.*, art. 9 (3), at 31. Emission limit values are defined by the IPPC Directives as the mass, expressed in terms of certain specific parameters, concentration and level of emission which may not be exceeded during one or more periods of time. *See* Council Directive 96/61 art. 2, 1996 O.J. (L 257) 26, 28.

242. *Id.* Annex III, at 31.

243. *Id.* art. 9(4), at 31.

> —'available techniques' shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economic and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator,
>
> —'best' shall mean most effective in achieving a high general level of protection of the environment as a whole.[244]

The BAT approach under the IPPC Directive is considered to be of "central importance to the integrated approach."[245] Instead of pursuing a pure technology-based approach, the directive gives Member States a high degree of discretion by stipulating that BAT does not mean the prescription of any "technique or specific technology, but taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions."[246] Thus, the implementation of the integrated concept rests largely on the discretion of the member states. The IPPC Directive gives only limited guidance[247] and establishes only two "baselines" when determining BAT.[248] First, where environmental quality standards[249] require stricter

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244. *Id.* art. 2, at 29.

245. Doppelhammer, *supra* note 228, at 203.

246. Council Directive 96/61 art. 9 (4), 1996 O.J. (L 257) 26, 31.

247. The IPPC Directive provides a list of considerations to be taken into account when determining BAT:

1. the use of low-waste technology;
2. the use of less hazardous substances;
3. the furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate;
4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;
5. technological advances and changes in scientific knowledge and understanding;
6. the nature, effects and volume of the emissions concerned;
7. the commissioning dates for new or existing installations;
8. the length of time needed to introduce best available technique;
9. the consumption and nature of raw materials (including water) used in the process and their energy efficiency;
10. the need to prevent or reduce to a minimum the overall impact of emissions on the environment and the risks to it;
11. the need to prevent accidents and to minimize the consequences for the environment;
12. the information published by the Commission pursuant to Article 16 (2) or by international organizations.

Council Directive 96/61, Annex IV, 1996 O.J. (L 257) 26, 40.

248. Doppelhammer, *supra* note 228, at 204.

249. Environmental Quality Standards are defined as "the set of requirements which must be fulfilled at a given time by a given environment or particular part thereof, as set out in Community legislation." Council Directive 96/61 art. 2, 1996 O.J. (L 257) 26, 29.

conditions than those achievable by using BAT, the directive requires that additional measures (to address these stricter standards) must be included in the permit.[250] Second, the permit must "[i]n all circumstances . . . ensure a high level of protection for the environment as a whole."[251] However, the directive also gives discretion to the Member States by failing to specify any kind of measures or to give any guidance as to what constitutes a high level of protection.[252]

In order to give the licensing authorities of the Member States further assistance in determining BATs, the IPPC Directive provides for an exchange of information between Member States, concerned industries, and environmental organizations, which is coordinated by the European Integrated Pollution Prevention and Control Bureau (EIPPCB) in Sevilla, Spain.[253] For this purpose, the EIPPCB has set up Technical Working Groups (TWG)[254] for thirty different industrial sectors covered by the directive.[255] As of September 2001, the TWGs finalized nine so-called BAT reference documents (BREFs), which are intended to give guidance to the national authorities of the Member States.[256] However, the BREFs do not have any binding effect on the local licensing authorities; they are merely guidance documents on BAT.[257]

The information exchange is supervised on a political level by the Information Exchange Forum (IEF), which consists of representatives of the Commission, delegates from the industry and environmental

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250. *Id.* art. 10, at 31.

251. *Id.* art. 9(4), at 31.

252. Long & Mereu, *supra* note 228, at 181.

253. *See* Council Directive 96/61, art. 16 (2) 1996 O.J. (L 257) 26, 32. *See generally* THE SEVILLA PROCESS: A DRIVER FOR ENVIRONMENTAL PERFORMANCE IN INDUSTRY—PROCEEDINGS 8 (GERMAN FEDERAL ENVIRONMENTAL AGENCY ed., 2001), *available at* http://europa.eu.int/comm/environment/ippc/index.htm/ [hereinafter SEVILLA PROCESS]; Zierock & Salomon, Die Umsetzung des Artikels 16 Abs. 2 der EG-IVU Richtlinie auf internationaler und nationaler Ebene, 9 ZEITSCHRIFT FÜR UMWELTRECHT 169 (1998); Peter Davids, *Die Konkretisierung der besten Verfügbaren Technik in der Anlagenzulassungspraxis*, UMWELT PLANUNG UND RECHT 439 (2000).

254. *See generally* CHRISTIAN HEY, *Balancing Participation in Technical Working Groups: The Case for the Information Exchange of the IPPC Directive*, *in* THE SEVILLA PROCESS 67-74 (2001).

255. Long & Mereu, *supra* note 228, at 182.

256. Final BREFS exist for the following sectors: pulp and paper manufacture, iron and steel production, cement and lime production, cooling systems, chlor-alkali manufacture, ferrous metal processing, nonferrous metal processing, glass manufacture, tanning of hides and skins. For a detailed overview of the development process of BREFs see the European Integrated Pollution Prevention and Control Bureau Web site, at http://eippcb.jrc.es; *see also* Davids, *supra* note 253, at 439 (giving a detailed overview of the scheduled timetable of all BREFs).

257. *See* Don Litten, *BAT Reference Documents: What Are They and What Are They Not*, *in* SEVILLA PROCESS, *supra* note 253, at 91-92; Doppelhammer, *supra* note 228, at 246; Long & Mereu, *supra* note 228, at 182.

NGOs.[258] Yet the parties within the IEF are not vested with a formal right to vote on the final BREFs.[259] Instead, BREFs are issued by the Commission on its sole authority.[260]

With regard to the goal of the IPPC Directive to achieve a high level of protection for the environment as a whole, the BREFs fail to demonstrate a new dimension of protection.[261] Given the methodological constraints on balancing impacts on different environmental media, the BREFs do not engage in any kind of multimedia balancing of environmental impacts.[262] Instead, the BREFs provide a systematic survey of emissions of an industrial installation, covering all environmental media in a single document.[263] It remains highly questionable whether the local licensing authorities, with their limited resources, will actually be able to determine BAT in the light of the local environmental conditions as required by the directive.[264] Therefore, the goal of providing a "high level of protection for the environment as a whole" seems somewhat unrealistic.[265]

As to the current status of the IPPC Directive and its success at substantive integration, the following observations can be made. Although the directive fails to define the term "integrated," the integrated character of the IPPC Directive is apparent in two respects. First, the directive is integrated in the sense that it incorporates six basic operator obligations into the permit. However, the directive only applies narrowly. Its scope is limited to certain industrial activities.[266] Second, the directive endorses substantive integration by introducing ELVs based on a BAT concept which takes into account the environment as a whole. However,

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258. Doppelhammer, *supra* note 228, at 246; Joachim Lohse & Knut Sander, *Is the BREF Process a Success or Failure? An NGO Perspective*, *in* SEVILLA PROCESS, *supra* note 253, at 61, 63-65 (noting that the TWG discussions suffer from being overloaded with political interests, rather than concentrating on their original purpose of collecting and evaluating factual information on technical issues).

259. Davids, *supra* note 253, at 441.

260. Long & Mereu, *supra* note 228, at 182.

261. Davids, *supra* note 253, at 441.

262. *Id.* at 442.

263. *Id.*

264. *See* Council Directive 96/61, art. 9 (4), 1996 O.J. (L 257) 31.

265. Austria recognized the need to give the local licensing authorities an additional methodological support by providing a guidance manual on how to assess the local situation. *See generally* Barbara Reiter, *Integrated Assessment on a Local Level*, *in* SEVILLA PROCESS, *supra* note 253, at 179-81.

266. *See* BOHNE ET AL., *supra* note 30, at 5-6; Emmott, *supra* note 228, at 24.

given that the BREFs fall short of any multimedia balancing, substantive integration is limited.[267]

4. Implementation of the Directive in the Member States

As of October 30, 1999, the date when the implementation period expired, only a few Member States had implemented the IPPC Directive in national law.[268] The implementation record did not improve substantially in 2000. As of April 2000, only nine Member States (Belgium, Denmark, Finland, France, Ireland,[269] Italy, Luxembourg, The Netherlands,[270] and Sweden[271]) had transposed the IPPC Directive into their domestic environmental law.[272] Some Member States, like Germany, which have adopted a sectoral approach to pollution control,[273] are struggling mightily with implementation.[274] It was not before July 27, 2001, that Germany had transposed the IPPC Directive in German Environmental Law.[275] From the very beginning the transposition was very controversial. Attempts to implement the directive by adopting a

267. It must be noted that the environmental quality standards under the IPPC Directive refers to the media specific Community Legislation. *See* Council Directive 96/61, art. 2, 1996 O.J. (L 257) 26, 29.

268. *See id.* art. 21-22, at 34.

269. *See generally* Ken Mecken, *The Introduction of Integrated Permitting to Ireland*, *in* SEVILLA PROCESS, *supra* note 253, at 185, 185-94.

270. Th. G. Drupsteen, *Integrated Pollution Prevention and Control: The Dutch Experience*, *in* Backes, *supra* note 216, at 81.

271. *See generally* Erik Nyström, *Swedish Experience of Integrated Permit Procedures*, *in* SEVILLA PROCESS, *supra* note 253, at 203, 203-10.

272. Doppelhammer, *supra* note 228, at 247 (giving an overview of the various transposition measures).

273. *Id.* at 249; *contra* Long & Mereu, *supra* note 228, at 183 (arguing that in Germany, an integrated pollution control system is already enshrined in two environmental protection laws, the Federal Emission Control Act (BImSchG) and Federal Water Acts (WHG)); *see also* Alfred Breuer, *Empfiehlt es sich ein Umweltgesetzbuch zu schaffen?*, GUTACHTEN B FÜR DEN 59. DEUTSCHEN JURISTENTAG 44 (1992) (stating that the present environmental law neither pursues an integrated approach nor is it fragmented).

274. *See generally* Peter Beyer, *Die Umsetzung der materiellen Anforderungen der IVU Richtlinie im Gesetzentwurf der Bundesregierung*, UMWELT PLANUNG UND RECHT 343 (1999); Udo Di Fabio, *Integratives Umweltrecht—Bestand, Ziele Möglichkeiten*, 19 NEUE ZEITSCHRIFT FÜR VERWALTUNGSRECHT 329 (1998); Dolde, *supra* note 238, at 315; Rudolf Steinberg & Isabel Koepfer, *IVU-Richtlinie und imissionsschutzrechtliche Genehmigung*, 112 DEUSTCHES VERWALTUNGSBLATT 973 (1997); Uwe Volkmann, *Umweltrechtliches Integrationsprinzip und Vorhabengenehmigung*, 89 VERWALTUNGS-ARCHIV 363 (1998); Andreas Wasielewski, *Stand der Umsetzung der UVP—Änderungsrichtlinie- und der IVU-Richtlinie*, 19 NEUE ZEITSCHRIFT FÜR VERWALTUNGSRECHT 15 (2000); G. Winter, *The IPPC Directive: A German Point of View*, *in* Backes, *supra* note 216, at 65; JOHANNES ZÖTTL, INTEGRIERTER UMWELTSCHUTZ IN DER NEUESTEN RECHTSENTWICKLUNG—DIE EG-RICHTLINIE ÜBER DIE INTEGRIERTE VERMINDERUNG DER UMWELTVERSCHMUTZUNG UND IHRE UMSETZUNG IN DEUTSCHES RECHT (1997).

275. Gesetz zur Umsetzung der UVP-Änderungsrichtlinie, der IVU-Richtlinie und weiterer Richtlinien zum Umweltschutz (Artikelgesetz), v. 27.7.2001, BGB1. I 1950.

comprehensive environmental code (Umweltgesetzbuch UGB) failed because the federal entity (Bund) did not have sufficient regulatory authority with regard to water.[276] Therefore, the implementation was achieved by amending the sectoral legislation.

Given the flexibility provided by the directive, its relatively slow implementation is somewhat surprising. That slow pace, however, clearly demonstrates the difficulties entailed in the transition from a media-specific to an integrated approach to environmental regulation.

V. CONCLUSION

The examples of integrated pollution control in the United States and the European Union discussed demonstrate a great variety in the concept. As to progress toward large-scale implementation of the idea, it appears that the European Union is at a somewhat more advanced stage. However, even though the transposition period of three years expired (October 30, 1999), many States required almost two additional years for the transposition of the IPPC Directive into domestic law. In the United States, a legislative basis for integrated permitting is still missing. The Common Sense Initiative and Project XL, which are both pilot projects, indicate that the United States is still in an experimental phase, at least at the federal level. However, some individual states have developed considerable experience in integrated permitting.

Comparing the integrated efforts in the United States and abroad with regard to their conceptual approach shows a number of similarities and common elements. It has to be noted that some initiatives in the United States, as well as the BREFs under the IPPC Directive, apply an industry-sector approach to integrated pollution control.

As to the level of procedural integration, this research found a great diversity in the examined examples. The United States offers examples of innovative permits with high degrees of procedural integration, like the New Jersey FWP, but also procedurally less integrated permitting models, such as Louisiana's Reengineered DEQ. Similarly, the integrated permit envisaged by the IPPC Directive lacks a high degree of procedural integration.

Analyzing the degree of substantive integration reveals the limits of the concept of integrated pollution control. Among the examined efforts

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276. Press Release of the German Ministry for Environment, Nature Protection, and Nuclear Safety (Sept. 2, 1999); *but see* Rainer Wahl, *Materiell-integrative Anforderungen an die Vorhabenzulassung und Umsetzung der IVU-Richtlinie*, 19 NEUE ZEITSCHRIFT FÜR VERWALTUNGSRECHT 502 (2000) (stating that the transposition of the directive in a comprehensive environmental law code failed because of the strong resistance).

of integrated permitting in the United States and abroad, only the Pulp and Paper "Cluster Rules" achieved a truly holistic multimedia approach. The vast majority of implementation experiences, however, produced additive multimedia permits that do not provide for any sort of multimedia balancing. Attempts to develop a holistic multimedia permit, like the iron and steel working group under the Common Sense Initiative, did not succeed in developing a multimedia permit, because it was confronted with severe methodological problems. The existing experience concerning substantive standard setting teaches that the core idea of a truly holistic multimedia approach remains largely wishful thinking and aspiration.

No doubt, there are also examples where integrated pollution control has resulted in environmental improvements, as was evidenced in the detection of unregulated sources and cross-media shifts in the New Jersey FWP. However, these were isolated examples. Whether the integrated concept provides superior environmental performance overall remains still to be seen.