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Brownfields Cleanup Standards: Consistency With the Principles of Environmental Justice Can Result in Clean Cleanups and Economic Development Too

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ESSAY

BROWNFIELDS CLEANUP STANDARDS: CONSISTENCY WITH THE PRINCIPLES OF ENVIRONMENTAL JUSTICE CAN RESULT IN CLEAN CLEANUPS AND ECONOMIC DEVELOPMENT TOO

*Samara F. Swanston**

INTRODUCTION

This article argues that the remediation of brownfields to the highest possible standards, consistent with the goals and principles of environmental justice, is attainable. Section I establishes that existing hazardous substance remedial programs have not been effective in urban areas. Section II discusses the genesis of the

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Brownfields Remediation movement, its relationship to Superfund Reauthorization, and discusses attempts at legislative revision. Section III describes industry's initiative to recruit people of color in an effort to weaken stringent cleanup standards in brownfields reform. Section IV argues that legislatively authorized lower cleanup standards will disproportionately burden communities of color and fail to adequately compensate landowners whose property values are affected by these lower standards. Section V focuses on the myth that cleaning up urban areas is too expensive and describes innovative technologies that can foster clean "cleanups" that are far less expensive than "cleanups" implementing traditional technologies.

Many people, organizations, governmental entities and even polluting industries claim to be committed to environmental justice today.¹ However, in some cases, environmental justice, of which brownfields remediation is a part, is being perverted by those unfamiliar with and/or uncommitted to its principles. While cleaning up and developing urban areas is undoubtedly a laudable goal, the manner in which it is accomplished will determine whether it is consistent with the principles of environmental justice or a perversion of those principles.

In an attempt to achieve this goal, *The First People of Color Environmental Leadership Summit* adopted seventeen principles of environmental justice.² Principle 1 "affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction."³

1. See Glen M. Vogel, P.E., *An Examination of Two of New York State's Brownfields Remediation Initiatives: Title V of the 1996 Bond Act and the Voluntary Remediation Program*, 17 PACE ENVTL. L. REV. 83, 85 (1999) ("[F]ederal, state, and local governments, as well as private organizations, have recently begun implementing initiatives to remove obstacles to brownfield redevelopment.").

2. See generally CENTER FOR PUBLIC ENVIRONMENTAL OVERSIGHT, THE FIRST PEOPLE OF COLOR ENVIRONMENTAL LEADERSHIP SUMMIT, PRINCIPLES OF ENVIRONMENTAL JUSTICE (adopted: Oct. 27, 1991) (suggesting that adopting the 17 principles of environmental justice will assist in rebuilding a sacred and necessary relationship with Mother Earth, celebrating culture, insuring environmental justice, and obtaining economic liberation), available at <http://www.cpeo.org/pubs/ejprinc.html> [hereinafter PRINCIPLES OF ENVIRONMENTAL JUSTICE].

3. *Id.* at Principle 1.

Principle 3 demands the “right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.”⁴ Principle 9 states that “[e]nvironmental justice protects the right of all victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.”⁵ Principle 10 identifies “[g]overnmental acts of environmental injustice as a violation of international law, the Universal Declaration On Human Rights, and the United Nations Convention on Genocide.”⁶ Principle 12 “affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources.”⁷ Principle 17 requires a “conscious decision to challenge and re-prioritize our lifestyles to insure the health of the natural world for present and future generations.”⁸ Each of these principles is applicable to brownfields cleanups as they establish that environmental remediation must protect the earth and living things from physical and economic damage, now and in the future.⁹

I. ENVIRONMENTAL JUSTICE ACTIVISTS CALL FOR CLEANING-UP URBAN AREAS

In response to the Love Canal incident, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (“CERCLA”).¹⁰ CERCLA enacted a

4. *Id.* at Principle 3.

5. *Id.* at Principle 9.

6. *Id.* at Principle 10.

7. *Id.* at Principle 12.

8. PRINCIPLES OF ENVIRONMENTAL JUSTICE, *supra* note 2, at Principle 17.

9. *See generally* PRINCIPLES OF ENVIRONMENTAL JUSTICE, *supra* note 2.

10. *See* Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-9675 (1994); *see also* Omar Saleem, *Overcoming Environmental Discrimination: The Need for a Disparate Impact Test and Improved Notice Requirements in Facility Siting Decisions*, 19 COLUM. J. ENVTL. L. 211, 211 (1994) (“For example, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) largely in response to the Love Canal incident.”).

contingency plan that prioritized the clean up of hazardous waste sites.¹¹ The contingency plan in CERCLA prioritizes cleaning up areas where people are dependent on groundwater for drinking.¹² Nevertheless, hazardous waste sites and waste disposal activities disproportionately burden communities of color, particularly in urban areas.¹³ The Environmental Protection Agency's ("EPA") data however, shows that approximately 78% of all Superfund cleanups occur outside urban areas.¹⁴ New York State's data mirrors the national statistics, with most Superfund cleanups occurring outside New York's urban areas.¹⁵ Moreover, cleanups occurring in communities of color were both slower in commencement and in completion of the remediation process.¹⁶

11. See 42 U.S.C. § 9605(a)(8)(A) (1994) (providing a national contingency plan that prioritizes the criteria used to determine which site will be cleaned up first).

12. See *id.* ("Criteria and priorities under this paragraph shall be based on relative risk or danger to the public health or welfare or the environment ... taking into account the potential for contamination of drinking water supplies . . .").

13. See Samara F. Swanston, *An Environmental Justice Perspective on Superfund Reauthorization*, 9 ST. JOHN'S J. LEGAL COMMENT. 556, 566 (1994) ("Superfund Reauthorization has important environmental justice consequences because communities of color and poor communities are disproportionately burdened with hazardous waste sites and Superfund is the law that addresses hazardous waste site cleanups.").

14. See Marianne Lavelle & Marcia Coyle, *Unequal Protection: The Racial Divide in Environmental Law*, NAT'L L.J., Sept. 21, 1992, at S6 ("The EPA's own data shows that only 18.4 percent of the Superfund sites are in urban areas, compared to 39.3 percent in the suburbs and 42 percent on rural land.").

15. Compare N.Y. STATE DEP'T OF ENVTL. CONSERVATION, REGISTRY OF INACTIVE HAZARDOUS WASTE SITE REGISTRY LISTINGS, VOLUME 2 (2000) (listing only 34 Inactive Hazardous Waste Disposal Sites in Region 2), with N.Y. STATE DEP'T OF ENVTL. CONSERVATION, REGISTRY OF INACTIVE HAZARDOUS WASTE SITE REGISTRY LISTINGS, VOLUMES 3, and 9 (2000) (listing 121 Hazardous Waste Disposal Sites in Region 3, and 162 Hazardous Waste Disposal Sites in Region 9).

16. See generally Rae Zimmerman, *Social Equity and Environmental Risk*, 13 RISK ANALYSIS 649, 664 (1993) (finding that minority communities had fewer remediation plans); Donald E. Lively, *The Diminishing Relevance of Rights: Racial Disparities in the Distribution of Lead Exposure Risks*, 21 B.C. ENVTL. AFF. L. REV. 309,

Given this reality, Principle 12 of the Principles of Environmental Justice advocates equal attention to urban areas.¹⁷

The small number of state and federal Superfund sites in urban New York are a testament to government and industry reluctance to remediate hazardous substance and hazardous waste sites in urban New York.¹⁸ While the government's limited involvement in Superfund remediation of urban areas has never been explained, environmental inequities are currently being identified.¹⁹ Generally, industry reluctance to remediate urban Superfund sites occurs because contributing parties do not want to take responsibility for cleaning up the environment.²⁰ Superfund is an effective federal law that has helped change the disposal behaviors of many polluting industries, and has forced polluters and their insurance companies to help clean up the environment.²¹

311 (1994) (finding disparities in remediation action, waste site placement, and cleanup plans).

17. See PRINCIPLES OF ENVIRONMENTAL JUSTICE, *supra* note 2, at Principle 12.

18. See N.Y. STATE DEP'T OF ENVTL. CONSERVATION, REGISTRY OF INACTIVE HAZARDOUS WASTE SITE REGISTRY LIST, VOLUME 2 (2000).

19. See generally Rae Zimmerman, *Issues of Classification in Environmental Equity: How We Manage is How We Measure*, 21 FORDHAM URB. L.J. 633 (1994) (addressing how race and ethnicity are defined for the purpose of examining the issue of environmental equity).

20. See Vogel, *supra* note 1, at 84.

21. See Albert Gore Jr., *Fixing Superfund: Why America Needs a Renewed Commitment to Environmental Remediation*, N.J. L.J., Feb. 26, 1996, at Supp. 2 (“[S]uperfund has prevented untold amounts of future pollution, by encouraging positive changes in corporate behavior.”); Howard A. Learner, *Environmental Compliance ‘Just Good Business,’* ILL. LEGAL TIMES ROUNDTABLE, Jan. 1992, at 1 (noting that “the imposition of strict liability and joint liability under Superfund has probably done more to change corporate behavior in terms of reducing the use of toxic chemicals and reducing the amount of toxic waste, and managing them better, than any other law. It has provided the economic incentive to do so.”).

II. USING BROWNFIELDS AS A VEHICLE IN THE CAMPAIGN TO WEAKEN SUPERFUND

After approximately a decade of failing to overturn the federal Superfund law in the courts,²² many responsible parties, their counsel, and their insurers began a multi-year campaign to reauthorize and weaken federal Superfund in Congress.²³ The campaign set out to create cheaper and less protective cleanup standards, and to make the public pay for an even greater share of the cleanup costs.²⁴ In this initiative, they enlisted leaders of color, like Ben Chavis, who, in my opinion, knows little about environmental law and even less about environmental remediation.²⁵ These leaders were largely uninformed about the environmental remediation process and were persuaded that governmental unfairness in cleanup standards and liability rules were the main reasons for the lack of development opportunities in their communities.²⁶

The main criticisms of the Superfund are that cleanups are both lengthy and ineffective, or contain cleanup standards that are too

22. See Amy Blaymore, *Retroactive Application of Superfund*, 12 B.C. ENVTL. AFF. L. REV. 1, 10-20 (1985) (discussing those cases challenging the constitutionality of Superfund); see, e.g., *United States v. N.E. Pharm. and Chems. Co.*, 810 F.2d 726, 732 (8th Cir. 1986), cert. denied 484 U.S. 848, 108 S. Ct. 146 (1987); *State of Ohio v. Georgeoff*, 562 F. Supp 1300, 1300-01 (N.D. Ohio 1983).

23. See Ron Chepesiuk, *The Environmental Lobbying Game: Who Plays it on Capitol Hill and How*, 102 ENVTL. HEALTH PERSP. 640 (1994) (noting that the industrial sector of organizations lobbying in the environmental policy area are the best funded and staffed groups); see also Charles de Saillan, *In Praise of Superfund*, 35 ENV'T 42 (1993) (stating that most criticisms of the Superfund are made by large industrial corporations and their insurers); see generally Swanston, *supra* note 13, at 566.

24. See Swanston, *supra* note 13, at 570-71.

25. See Kimberlianne Podlas, *A New Sword to Slay the Dragon: Using New York Law to Combat Environmental Racism*, 23 FORDHAM URB. L.J. 1283, 1284 (1996) (citing Marianne Lavelle, *Did NAACP's Ben Chavis Switch Sides, or Work to Bring Opponents Together?*, NAT'L L.J., Sept. 5, 1994, at A1, criticizing Ben Chavis for working along side insurance companies and other adversaries of Superfund cleanup).

26. In my personal experience, some environmental leaders of color advocating for lower cleanup standards know little about environmental remediation.

stringent.²⁷ Underlying the criticisms, and not always verbalized, is concern about the cost of cleaning up contaminated sites.²⁸ In addition, litigation costs between responsible parties and their insurers are often cited as a reason Superfund reform is needed.²⁹ Although the fight continues on Capitol Hill, the plan to weaken the Superfund through reauthorization has largely failed.³⁰ The EPA, meanwhile, has embarked upon a program of regulatory reform to address the criticisms directed at the program.³¹

Having failed to weaken Superfund through the reauthorization and revision of CERCLA, advocates for responsible parties, developers, and the regulated community devised a "back-door"

27. See Michael S. Moore, *Thinking Outside the Box: A Negotiated Settlement Agreement for the Remediation of the General Electric/Housatonic River Site Ensures Environmental Health and Economic Prosperity for Pittsfield, Massachusetts*, 26 B.C. ENVTL. AFF. L. REV. 577, 597 (1999) (stating that the major Superfund criticisms are the length of time it takes to remediate sites, high remediation costs, and stringent cleanup standards).

28. See generally Joel B. Eisen, *Brownfields of Dreams?: Challenges and Limits of Voluntary Cleanup Programs and Incentives*, U. ILL. L. REV. 883, 906-08 (1996) (stating that the uncertainty of cleanup costs are associated with ambiguous cleanup standards); see also Lincoln L. Davies, *Working Toward a Common Goal? Three Case Studies of Brownfields Redevelopment in Environmental Justice Communities*, 18 STAN. ENVTL. L.J. 285, 292 (1999) (noting that businesses shy away from brownfields due to fear of cleanup and remediation costs); Thomas G. Kessler, *The Land Recycling and Environmental Remediation Standards Act: Pennsylvania Tells CERCLA Enough is Enough*, 8 VILL. ENVTL. L.J. 161, 170 (1997) ("The no-fault liability scheme imposed under CERCLA has been the subject of much debate and the focal point of criticism.").

29. See Daniel W. Simcox, *The Future of Europe Lies in Waste: The Importance of the Proposed Directive on Civil Liability Damage Caused by Waste to the European Community and its Environmental Policy*, 28 VAND. J. TRANSNAT'L L. 543, 599-600 (1995) (citing a 1993 U.S. study that claimed that 90% of all Superfund costs go to lawyers).

30. See *Brownfields Revitalization and Environmental Restoration Act of 2000*, S.2700, 106th Cong. (2000).

31. See generally 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, 3-4 (1998) (describing the EPA's regulatory reform initiative, Project XL).

approach that would produce cheaper and dirtier cleanups.³² These parties decided to name contaminated properties in need of development "brownfields," which, in effect, blurred the definition of a Superfund site.³³ If a site has contamination that exceeds state or federal standards, it should be subject to remediation under the existing laws of New York State.³⁴ If the site does not have high contamination levels, there may be no need for regulatory involvement.³⁵ The distinction is important because we have existing legislative programs at the state and federal level in New York to respond to Superfund sites.³⁶ Calling these sites "brownfields" creates a new category of sites that would be regulated in accordance with newly proposed and less stringent laws.³⁷ The brownfields debate and alleged need for more remedial legislation did not originate in communities built on or near Superfund sites.³⁸ The debate began and continues in the offices of developers, politicians, businessmen, foundation program officers, and among members of the environmental and real estate bars.³⁹

III. INDUSTRY STRATEGY TO CAPTURE THE NATURAL ENEMIES OF WEAKENED CLEANUP STANDARDS: COMMUNITIES OF COLOR

To ensure that a strategy of lowering cleanup costs and weakening liability standards succeeds, industry strategists have embarked on a campaign intended to capture the support of poor

32. See generally Swanston, *supra* note 13, at 566 (stating that effective Superfund provisions should not be reauthorized or altered to accommodate the desires of influential special interest groups).

33. See *id.*

34. See Brandford C. Mank, *Reforming State Brownfields Programs to Conform with Title VI*, 25 HARV. ENVTL. L. REV. 115, 116 (2000) ("[S]tates, in most cases, would eventually clean up brownfields to meet strict residential standards, unless the site qualifies for a voluntary action program that allows for lower commercial or industrial standards.").

35. See *id.*

36. See 42 U.S.C. §§ 9601-9675 (1994); see also 40 C.F.R. pt. 300 (1984); N.Y. ENVTL. CONSERV. LAW § 27 (McKinney 1999).

37. See Mank, *supra* note 34, at 116.

38. See generally Swanston, *supra* note 13, at 566.

39. See *id.*

communities and communities of color.⁴⁰ Historically, responsible parties claimed that it was unconscionable to require them to perform cleanups at urban sites that were ubiquitously contaminated.⁴¹ Now these same parties, motivated by self-interest, are going to communities of color and speaking about all the wonderful community development opportunities that are being denied them due to the government's impossibly high cleanup standards.⁴² These same parties argue that it is a crime that urban communities are being deprived of needed economic development opportunities.⁴³

A Voluntary Cleanup Program that is not statutorily authorized governs brownfields remediation in New York.⁴⁴ Like the federal government, New York State embarked on a regulatory reform initiative that allows responsible parties to clean up their sites to a preferred level that is consistent with anticipated site uses.⁴⁵ However, the trouble with New York's regulatory reform is that it offends New York State law.⁴⁶ Under New York's regulatory reform initiative, Voluntary Agreements for brownfields sites may be obtained at listed state Superfund sites.⁴⁷ Hence, volunteers can sign an agreement to clean up the environment regardless of

40. I witnessed industry counsel, consultants and strategists attempt to gain the support from poor communities and communities of color by telling these communities that they were denied economic development due to the Government's stringent cleanup standards.

41. *See id.*

42. *See id.*

43. *See id.*

44. *See* Michael B. Gerrard, *New York State's Brownfields Programs: More and Less than Meets the Eye*, 4 ALB. L. ENVTL. OUTLOOK 18 (1999) (stating that New York is one of the few states that does not statutorily regulate voluntary brownfield cleanup programs).

45. *See* Michael W. Peters, *New York's Push Toward a Voluntary Cleanup Program for Brownfields*, 1 N.Y. ENVTL. COMPLIANCE UPDATE (M. Lee Smith Publishers, LLC, Brentwood, Tenn.), Apr. 1995, at 3, 4.

46. *See* N.Y. COMP. CODES R. & REGS. tit. 6 § 375-1.1(b)(2)(i) (1999) (stating that the goal of New York's Program is restoration to its original state).

47. *See generally* N.Y. STATE DEP'T OF ENVTL. CONSERVATION, IMPROVING OUR ENVIRONMENT, IMPROVING OUR ECONOMY: REGULATORY REFORM AT THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (July 1994).

whether the neighbors or New York State have sufficient information about the site.⁴⁸

While New York State's Superfund program has its faults, calling for "too clean cleanups" is not one of them.⁴⁹ The major problem with New York's Superfund program is that it is only applicable to hazardous waste sites and does not address hazardous substance sites.⁵⁰ By leaving out hazardous substance sites, New York is creating new "Love Canals" for the future.⁵¹ With approval from the State Department of Environmental Conservation ("DEC"), only the Real Estate Division of the Attorney General's Office stands between developers who want to build housing on sites contaminated with hazardous substances and the unsuspecting public.⁵² Fortunately, at more than one site, the New York Attorney General's office has stopped the sale of homes built on contaminated or hazardous substance construction sites, even though the New York State DEC had signed off on the project and found no hazardous waste.⁵³

There is a difference between the need for development and the need for environmental remediation.⁵⁴ Communities of color and low-income communities certainly need economic development,

48. *See id.*

49. *See generally* Swanston, *supra* note 13, at 570.

50. *See* Gerrard, *supra* note 44, at 20 (pointing out that New York State's Title 13 program is narrower than CERCLA, since Title 13 only applies to "hazardous waste" sites, whereas CERCLA uses the term "hazardous substances," producing a wider jurisdiction for CERCLA).

51. *See generally* *Hazardous Waste: EPA, Justice Invokes Emergency Authority, Common Law in Litigation Campaign Against Dump Sites*, 10 ENVTL. L. REP. (Envtl. L. Inst.) 10034 (1980) (describing the Hooker Chemical Corporation's waste disposal at Love Canal in the City of Niagara Falls, New York).

52. *See, e.g.*, Harold McNeil, *Toxic Waste Prompts Homeowners to Demand Relocation*, BUFF. NEWS, Nov. 17, 1999, at B5 (discussing the Hickory Woods site in Buffalo, an area where homeowners are expressing a concern that a toxic waste dump, similar to Love Canal, is brewing in their backyards. City officials argue that homeowner claims are greatly exaggerated.).

53. *See id.* (explaining that at the Hickory Woods site in Buffalo, a housing development was constructed adjacent to a hazardous waste site and the local residents were not informed).

54. *See* Swanston, *supra* note 13, at 565.

and in some cases have needed it for fifty or more years.⁵⁵ If the government is committed to supporting economic development in these communities, it can provide aid directly.⁵⁶ Developers and politicians who want to encourage development in our communities--in my community--can achieve their goal in many ways.⁵⁷ The government can and does provide tax incentives, affordable financing for both commercial and industrial development, lines of credit for other community needs, and low-interest loans.⁵⁸

Why must economic development depend on our communities abandoning their right to complete remediation, a right that all other communities in New York can expect? Why does economic development have to start with environmental degradation? Economic development initiatives that begin with lower cleanup standards benefit wealthy developers and polluters at the expense of the residents in the respective communities.⁵⁹

IV. LEGISLATIVELY AUTHORIZED LOWERED CLEANUP STANDARDS DISPROPORTIONATELY BURDEN COMMUNITIES OF COLOR

Communities located near sites with legislatively authorized lower cleanup standards forfeit much of their hard-earned equity in affected property.⁶⁰ With lower cleanup standards, developers help determine a community's potential for growth in the future.⁶¹ With legislatively authorized lower cleanup standards, the preexisting

55. In my community economic development has been needed for over 50 years.

56. See generally Gerrard, *supra* note 44, at 21 (discussing a variety of state-provided financial incentives and financial aid developments designed to aid brownfields redevelopment in smaller communities).

57. See *id.*

58. See *id.*

59. See generally Alexander H. Tynberg, *Oregon's New Cleanup Law: Short-term Thinking at the Expense of Long Term Environmental and Economic Prosperity*, 12 J. ENVTL. L. & LITIG. 471 (1997) ("[T]he new cleanup law seeks short-term economic benefit for industry at the expense of Oregon's long-term land and water quality, and, thus, long-term economic prosperity.").

60. See *id.*

61. See, e.g., Peters, *supra* note 45, at 4 (stating that sites only have to be developed to the extent of their intended use).

inequities in the Superfund program will be institutionalized.⁶² Moreover, not every development proposed in communities of color will succeed, and development sites not fully remediated will result in environmental problems for the community.⁶³ Thus, mistakes resulting from lower cleanup standards will be borne by community residents who live on or near these sites.⁶⁴

Cleanup standards developed by the government are not the primary cause of inadequate development in communities of color.⁶⁵ A 1997 study commissioned by the EPA and the Department of Housing and Urban Development ("HUD") shows that the primary reason for the lack of development in these communities is the market.⁶⁶ The market is driven by a number of factors, and one such factor is racism.⁶⁷ Developers select sites based upon perceived economic benefits.⁶⁸ For the most part, they do not see an economic benefit in coming to our communities. Of course, if we give developers land and empowerment zone money, they will come. However, developers will not necessarily bring any local economic benefits to the community.

V. INNOVATIVE TECHNOLOGIES AND WHY WE CAN HAVE IT ALL

Some argue that the government's stringent cleanup standards are interfering with the natural development of the real-estate market and the benefits that flow from capitalism.⁶⁹ I believe the

62. See Julia A. Solo, *Urban Decay and the Role of Superfund: Legal Barriers to Redevelopment and Prospects for Change*, 43 BUFF. L. REV. 285, 310-11 (1995) (stating that industrial development and job security, may be achieved at the expense of health and safety standards).

63. See *id.*

64. See *id.*

65. See URBAN INSTITUTE, THE EFFECTS OF ENVIRONMENTAL HAZARDS AND REGULATION ON URBAN REDEVELOPMENT 51 (Aug. 1997) (stating that "developers cited non-environmental factors, especially market demand, as being 'critical' to the implementation of completed projects."), available at <http://www.epa.gov/swerosps/bf/pdf/hazreg.pdf>.

66. See *id.*

67. See *id.*

68. See *id.*

69. See generally Terry J. Tondro, *Reclaiming Brownfields to Save Greenfields: Shifting the Environmental Risk of Acquiring and Reusing Contaminated Land*, 27 CONN. L. REV. 789, 801 (1995)

opposite is true. Sustainable, environmentally sound and cheap cleanups are within reach.⁷⁰ The EPA anticipates that remedial cleanups using phytoremediation will not only increase, but will also cost significantly less than traditional alternatives.⁷¹ If we insist on clean and inexpensive cleanups, the phytoremediation market will promote and develop innovations that will enable thorough cleanups that are less expensive.⁷²

There are several reasons why phytoremediation promises to be an effective technology and innovation.⁷³ Phytoremediation uses plants to clean up contaminated sites.⁷⁴ For example, mustard, spinach, sunflower, prairie grasses, alfalfa, juniper, fescue, rye, oat, cowpeas, clover, poplar, willow, mulberry, cottonwood trees, and a host of other plants are being used to clean up solvents, petroleum, mercury, lead, PCP's, PAH's, radionuclides, explosives, TCE, and cadmium found in soil and groundwater.⁷⁵

("[F]lexibility in establishing appropriate levels of clean-up and in identifying the new user of a Brownfield will raise sensitive environmental equity issues.").

70. *See generally* STEVEN A. ROCK & PHILIP G. SAYRE, ENVIRONMENTAL PROTECTION AGENCY, PHYTOREMEDIATION OF HAZARDOUS WASTES: POTENTIAL REGULATORY ACCEPTABILITY (1999) ("The estimated costs of various phytoremediation techniques vary from 10% to 50% of physical, chemical, or thermal techniques."), available at <http://www.epa.gov/ordntrmt/ORD/NRMRL/rcb/phytohaz.htm> (last modified Sept. 16, 1999).

71. *See id.* (stating that compared to phytoremediation costs, the costs of traditional alternatives to hazardous waste cleanups are more than double).

72. *See generally* PAUL A. SAMUELSON & WILLIAM NORDHAUS, ECONOMICS 77-101 (12th ed., 1985) (providing an overview of supply and demand economics).

73. *See generally* EPA, A CITIZEN'S GUIDE TO PHYTOREMEDIATION (1998), available at <http://www.clu-in.org/products/citguide/phyto2.htm>.

74. *See id.*

75. *See* EPA, PHYTOREMEDIATION OF WOOD TREATMENT FACILITY SOILS (1999) (discussing how phytoremediation removes PCPs, PAHs, chlorinated solvents, insecticides, and nitroaromatic explosives from contaminated soil), available at <http://www.epa.gov/ORD/NRMRL/rcb/phytwood.htm> (last modified Sept. 16, 1999).; *see also* EPA, PHYTOREMEDIATION OF TCE CONTAMINATED SHALLOW GROUNDWATER (1999) ("Phytoremediation of ground water involves planting deep-rooted, water-loving vegetation to reduce contaminant levels in the saturation zone."), available at <http://www.epa.gov/>

The auto industry,⁷⁶ nuclear power industry,⁷⁷ and even the military⁷⁸ are already using phytoremediation as a cheaper solution. Phytoremediation is even being used to clean up residual radioactive materials from the Chernobyl site.⁷⁹

ORD/NRMRL/rcb/phytotce.htm; EPA, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, BROWNFIELDS SUCCESS STORIES: MUSTARD PLANTS HELPING TO CLEAN UP SITE (1998) (describing how mustard plants were used to clean up a site heavily contaminated with lead in just one year), available at [http://www.epa.gov/swerosps/bf/html-doc/ss_trent1 .htm](http://www.epa.gov/swerosps/bf/html-doc/ss_trent1.htm); Steven D. Aust & John T. Benson, *The Fungus Among Us: Use of White Rot Fungi to Biodegrade Environmental Pollutants*, 101 ENVTL. HEALTH PERSP. 232 (1993) (“The list of chemicals white rot fungi are able to degrade includes polyaromatic hydrocarbons, PCBs and other halogenated aromatics (including dioxins), some dyes, TNT and other nitro explosives, and toxic chemicals such as cyanides, azide, carbon tetrachloride and pentachlorophenol.”).

76. See, e.g., DAIMLERCHRYSLER CORP., DAIMLERCHRYSLER USES FLOWER POWER TO CLEAN UP CONTAMINATED PLANT SITE 1 (Feb. 28, 2000) (using phytoremediation with sunflowers and mustard plants to remove lead contamination from the industrial site soil), available at http://us.media.daimlerchrysler.com/index_e.htm; see also *Chevron Explores Phytoremediation Possibility on Petroleum*, 21 HAZARDOUS WASTE NEWS (Business Publishers, Inc., Silver Spring, Md.), July 5, 1999 (stating that Chevron Research and Technology are studying the effectiveness of phytoremediation).

77. See Nigel Hawkes, *Spinach Becomes Nuclear Plant*, LONDON TIMES, May 23, 1998, at D13 (describing how the spinach plant along with dwarf sunflowers, sugar beets and indian mustard plants are being used to cleanup soil contaminated with radioactive waste at the Bradwell Power Station in Essex).

78. See *Phytoremediation, Green Bullets Target Army Soil Contamination*, 21 HAZARDOUS WASTE NEWS (Business Publishers, Inc., Silver Spring, Md.), Sept. 20, 1999 (stating an arms range is being cleaned up using phytoremediation at New Jersey’s Fort Dix); see also *X-Ray Eyes Reveal Contamination History*, 13 WASTE TREATMENT TECH. NEWS (Business Communications Company, Inc., Norwalk, Conn.), June 1998 (noting that native aquatic plants, such as duckweed, can be used in phytoremediation to remove contaminants from a nuclear materials operations).

79. See *Using Phytoremediation To Clean Up Chernobyl-Accident Residual Radioactive Materials*, 2000 INNOVATOR’S DIG. (Merton Allen Associates, Plantation, Fla.), Feb. 22, 2000, at 4.

Not only is phytoremediation cheaper, it is more environmentally sustainable.⁸⁰ Phytoremediation even lowers the air and water emissions that result from other cleanup options.⁸¹ Finally, the phytoremediation process is passive and solar driven, is less expensive than mechanical treatments, and is generally accepted by the public.⁸²

CONCLUSION

The natural resources of the earth do not only belong to us; they belong to subsequent generations as well. We can make the decision to leave nothing for the future, or we can have foresight. The first principle of environmental justice requires holding Mother Earth sacred.⁸³ We do not leave poison in that which we hold sacred. That is not environmental justice. Recently, a coalition of religious leaders stated that “[e]nvironmental policy must protect the poor and powerless first and take economic considerations into account second.”⁸⁴ The leaders stated that economic growth should not “take precedence over the life and physical health of God’s children.”⁸⁵ A principled approach to environmental remediation

80. See Tynberg, *supra* note 59, at 495 (arguing that remedial actions should incorporate remedial controls such as bioremediation and phytoremediation to address the unavoidable eventuality of failure of engineering controls); see also Emin Endo, *Cleanup Plan for Peconic Under Study: Environmentalists are Opposed to Excavation*, NEWSDAY, Feb. 16, 2000, at A28 (“[T]wo environmental groups say excavating with heavy equipment would destroy wetlands and further contaminate the river. Instead, they advocated for use of plants to absorb the pollution wherever possible.”).

81. See JONATHAN CHAPPELL, EPA, PHYTOREMEDIATION OF TCE USING POPULUS 3 (Aug. 1997) (stating in Table 2 that one of the advantages of phytoremediation is fewer air and water emissions), available at <http://clu-in.com/photoTCE.htm>.

82. See REMEDIATION TECHNOLOGIES DEVELOPMENT FORUM, WORKSHOP ON PHYTOREMEDIATION OF ORGANIC CONTAMINANTS (Dec. 1996), available at <http://www.rtdf.org/public/phyto/minutes/phytomin.htm>.

83. See PRINCIPLES OF ENVIRONMENTAL JUSTICE, *supra* note 2, at Principle 1.

84. See Cheryl Hogue, *Economics Should Be Second to People in Environment Policy, Religious Leaders Say*, NAT’L ENV’T DAILY (BNA) (Feb. 7, 1997).

85. See *id.*

and brownfield development will never look like an error in retrospect. We can have economic development and clean cleanups too. We can have it all, but only if we want it all.