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NEWS & ANALYSIS

Our Tainted Environment and Juvenile Violence: A Look to Legislators

by Leticia M. Diaz and Peggy Clarie

I. Introduction

In the 19th century, doctors prescribed Soothing Syrup for cranky babies. The syrup was actually laudanum, which is opium, dissolved in water. While it did quiet and calm unruly behaved children, the side effects included addiction and death.¹ Currently, Soothing Syrup prescriptions are on the rise as more and more 21st century doctors prescribe psychotropic drugs to misbehaving children.

In January 2003, a study published in *The Archives of Pediatrics and Adolescent Medicine*² reported that the number of children and adolescents who take psychiatric drugs more than doubled from 1987 to 1996.³ To determine how frequently doctors prescribed drugs to provide relief for behavioral and emotional problems for patients under 20, researchers studied Medicaid programs in two states and one health maintenance organization.⁴ The study noted that the most commonly prescribed drugs were stimulants, like Ritalin, prescribed for attention deficit disorder (ADD), and anti-psychotics which assisted with mood stabilization to manage depression and aggression.⁵

While the study did confirm that doctors are using medicine to treat depression, attention disorder, severe anxiety, aggression, and other conditions in children, the study did not examine why these conditions are increasing in children.⁶ Instead, the study authors suggested that the long-term effects of the drugs on children are still unknown and suggested that more studies be done to examine the need for such drugs and if needed the best way to prescribe.⁷

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1. John Siler, *We Must Deal With Children, Not Dope Them*, BOSTON HERALD, Apr. 12, 2001, at 27.
2. Julie Magno Zito et al., *Psychotropic Practice Patterns for Youth: A 10-Year Perspective*, 157 ARCHIVES OF PEDIATRICS & ADOLESCENT MED. 17-25 (2003).
3. Erica Goode, *Study Finds Jump in Children Taking Psychiatric Drugs*, N.Y. TIMES, Jan. 14, 2003, at A18.
4. *Id.*
5. *Id.*
6. *Id.*
7. *Id.*

The medical community is not the only institution seeking to address behavior management problems in children. In response to increasing violence in the academic environment, private and public schools have adopted zero tolerance discipline policies.⁸ These policies provide for strict punishments such as suspension, expulsion, or law enforcement referrals for violations of school rules.⁹ Initially, the policies were created in response to dangerous students bringing weapons to schools.¹⁰ However, recently many children are being subjected to zero tolerance policies and punishments for minor, nonviolent offenses. For example, in 1998 more than 3.1 million children were suspended and another 87,000 expelled under such policies.¹¹

Both the medical and educational community have spent valuable time and resources to address the increasing level of behavior problems by children. While their efforts sought to manage the problem, there is a continuing call to find the causes of the increased violence, aggression, and anti-social behavior exhibited by children.¹² One cause that has been presented to explain the increasing anti-social behavior of children is their exposure to environmental contaminants.¹³ Limited, but growing, evidence suggests that children's exposure to contaminants such as pesticides and toxic metals is a cause of anti-social behavior such as aggression, learning disabilities, and other illnesses.¹⁴

The government is part of the growing number of institutions that are accepting environmental contaminants as a possible cause of anti-social behavior.¹⁵ The U.S. Department of Health and Human Services has expressed interest in conducting a study to track up to 100,000 children from the womb to high school to assess the effects of chemical exposure on childhood development.¹⁶ This Article first examines the growing acceptance of the causal link between pesticide and toxic metal exposure and children's anti-so-

8. ADVANCEMENT PROJECT & CIVIL RIGHTS PROJECT, HARVARD UNIVERSITY, OPPORTUNITIES SUSPENDED: THE DEVASTATING CONSEQUENCES OF ZERO TOLERANCE AND SCHOOL DISCIPLINE (2000), available at http://www.civilrightsproject.harvard.edu/research/discipline/call_opport.php (last visited Feb. 10, 2003).

9. Linda Starr, Education World, *Stop Tolerating Zero Tolerance*, at http://www.educationworld.com/a_issues/issues303.shtml (last visited Feb. 10, 2003).

10. ADVANCEMENT PROJECT & CIVIL RIGHTS PROJECT, *supra* note 8.

11. *Id.*

12. Benjamin L. Preston et al., *Environmental Health and Antisocial Behavior: Implications for Public Policy*, 63 J. OF ENVTL. HEALTH 9 (2001).

13. *Id.*

14. *Id.*

15. Sheila Kaplan & Jim Morris, *Kids at Risk, Chemicals in the Environment Come Under Scrutiny as the Number of Childhood Learning Problems Soars*, U.S. NEWS & WORLD REP., June 19, 2000, at 47.

16. *Id.*

cial behavior. The Article then chronicles the federal and state legislative efforts to protect children from the dangers of pesticide and toxic metal exposure.

II. Have Pesticides and Toxic Metals Impacted Children's Behavior?

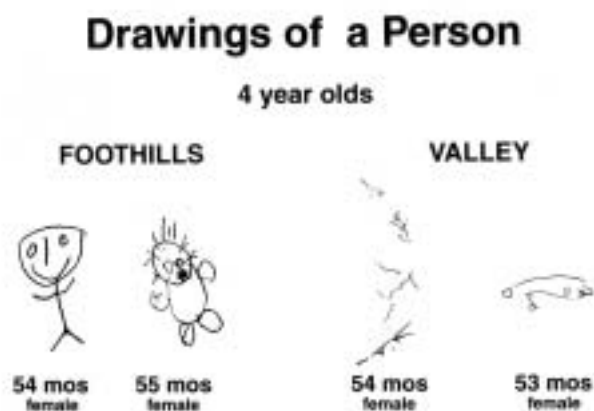
The dangers of pesticides to children's health have been an area of high concern in the United States since publication in 1993 of the report *Pesticides in the Diets of Infants and Children* by a committee of the National Academy of Sciences (NAS).¹⁷ The report communicated its concern that prior approaches to risk assessment of pesticides had not adequately considered the unique susceptibilities of infants and children.¹⁸ The NAS report noted that early exposures to pesticides can cause disease, including neurologic and behavioral dysfunction, both in childhood and adulthood.¹⁹ This report has proved to be prophetic as childhood behavioral problems such as learning disabilities, hyperactive behavior, and aggression by children have risen in recent years. The school system has been a front line institution that has dealt with the effects of these problems. To accommodate these learning and behavioral problems, school systems have had to increase the number of special education programs available.²⁰ Statistics indicate that the number of children in special education programs increased 191% from 1977 to 1994.²¹

While school systems seek to manage students who are more aggressive and skill-deficient, scientists are looking for the causes of the rise of behavioral and learning difficulties. Studies have confirmed that children with unacceptable high toxicity levels may suffer impaired cognitive ability.²² Studies further indicate that this impaired cognitive ability may manifest itself in learning difficulties and anti-social behavior.²³ The magnitude of this problem is affirmed by the American Academy of Child and Adolescent Psychiatry which estimates that one out of every six children in the United States have blood levels of lead in the toxic range, and further studies estimate that over 12 million children suffer from learning, developmental, and behavioral disabilities such as ADD.²⁴

Many researchers now recognize that a variety of chemicals commonly encountered in industry and the home can contribute to developmental, learning, and behavioral disabilities.²⁵ Pesticides and toxic metals used in homes and

schools are types of chemicals that children encounter and that impact their behavior. Pesticides, which includes herbicides, insecticides, rodenticides, miticides, and fungicides, contain a neurotoxicant to kill pests.²⁶ Neurotoxicants are chemicals that are poisonous to cells or interfere with hormones, neurotransmitters, or growth factors.²⁷ When researchers tested pesticides, which are classified as organophosphates, on animals, it was discovered that a small, single dose on a significant day of development could cause hyperactivity and permanent changes in neurotransmitter receptor levels in the brain.²⁸ Similar changes in children can lead to behavior and learning problems.²⁹ Other studies have found that exposure to toxic metals and pesticides leads to aggressive and violent behavior by children as the exposure leads to inhibition of cholinesterase activity in the brain.³⁰

One of the most definitive studies conducted showing a direct correlation between pesticide exposure and children's behavior was conducted by the University of Arizona's Dr. Elizabeth Guillet in 1998.³¹ She studied children from an agricultural community that applied pesticides.³² She asked them to draw a picture of a person and then compared their drawing to children the same age living in a similar community that did not use pesticides.³³ The drawings showed diminished ability, coordination, and creativity.³⁴ She also noted that exposed children were more aggressive and had short-term memory impairment.³⁵ The following chart³⁶ illustrates the differences in the drawings between the children exposed to pesticides and those who were not exposed. The differences are striking and illustrate how pesticide exposure impacts the mental and physical processes of children.



17. Phillip J. Landrigan et al., *Pesticides and Inner-City Children: Exposures, Risks, and Prevention*, 107 ENVTL. HEALTH PERSP. 431-37 (1999), available at <http://www.mindfully.org/Pesticide/Inner-City-Children-Exposures.htm> (last visited Feb. 10, 2003).

18. *Id.*

19. *Id.*

20. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, POISONED SCHOOLS: INVISIBLE THREATS, VISIBLE ACTIONS 11 (2001), available at <http://www.childproofing.org/poisonedschoolsmain.html> (last visited Jan. 2003).

21. *Id.* at 11.

22. Preston et al., *supra* note 12.

23. *Id.*

24. Bernard Windham, *Effects of Toxic Metals on Learning Ability and Behavior*, at <http://www.cqs.com/toxicmetals.htm> (last visited Feb. 10, 2003).

25. Greater Boston Physicians for Social Responsibility, *In Harms Way: Toxic Threats to Child Development*, at <http://psr.igc.org/iHW.htm> (last visited Feb. 10, 2003).

26. Landrigan et al., *supra* note 17; Greater Boston Physicians for Social Responsibility, *supra* note 25.

27. Greater Boston Physicians for Social Responsibility, *supra* note 25.

28. *Id.* at 80, 81.

29. *Id.*

30. Windham, *supra* note 24.

31. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 38. Elizabeth A. Guillet et al., *An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico*, 106 ENVTL. HEALTH PERSP. 347 (1998).

32. *Id.*

33. *Id.*

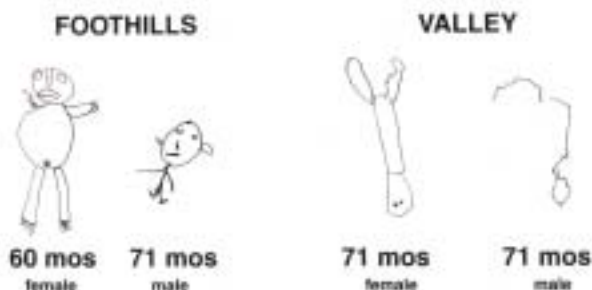
34. *Id.*

35. *Id.*

36. *Id.* at 39.

Drawings of a Person

5 year olds



Since the 1993 publication of the NAS report, more studies have been conducted that document the link between pesticide exposure and toxic metals and children's behavioral difficulties.³⁷ Many of these studies have supported the hypothesis that exposure is a cause of behavioral abnormalities in adults and children.³⁸ However, the U.S. Environmental Protection Agency (EPA) and scientists recognize that greater and long-term studies are needed to further correlate the cumulative effects of pesticide and toxic metals exposure and children's behavioral difficulties.³⁹ Time is therefore of the essence. A delay in funding, commissioning, or carrying out these very essential studies, could result in an over abundance of toxic children.

III. Children Have a Higher Risk of Exposure and Vulnerability to Toxic Exposure

Children's exposure to pesticides comes from multiple fronts. The first front of exposure is the physical environment in which they play, learn, and live on a daily basis. They risk exposure at home, school, and day care centers as well as parks and gardens.⁴⁰ While most parents would never think of putting their child in harm's way, their child's daily activities at home and school places them at a great risk of suffering the harmful effects of pesticide exposure. The statistics reflect the magnitude and ubiquitousness of pesticide usage in American homes. Over 90% of American households use pesticides, and in 1995 homeowners purchased over \$2 billion in pesticide products.⁴¹ Chlorpyrifos, an organophosphate pesticide, is one of the pesticides that threatens the children's environment with serious health consequences.⁴²

Chlorpyrifos has been used for the past 30 years as a home and garden pesticide and has been most the common pesti-

cide used in schools to control termites and cockroaches.⁴³ EPA has noted that organophosphates have a common method of toxicity as they all affect the nervous system by reducing the ability of an enzyme to deactivate a neurotransmitter that transfers impulses across nerves to muscles.⁴⁴ This interaction on the nervous system allows nerve impulses to remain active longer than they normally do and this results in overstimulation of the nervous system.⁴⁵ This overstimulation may cause toxic effects such as headaches, nausea, dizziness, anxiety, restlessness, and other debilitating health effects.⁴⁶ A 1998 study of chlorpyrifos, marketed under the name Dursban, found that a single spraying of the pesticide resulted in accumulation on furniture, toys, and other absorbent surfaces for up to two weeks.⁴⁷ In the summer of 2000, EPA and the manufacturer of Dursban agreed to eliminate its use for nearly all household purposes and to reduce its use in agriculture.⁴⁸ The agreement called for production to cease and a phaseout to begin for all home, lawn and garden, and pest control uses.⁴⁹ This measure as noted by EPA will offer special protection for children whose exposure to the dangerous pesticide was so great.⁵⁰

The second front in which children are exposed is diet.⁵¹ Children drink more water and eat more food than adults and therefore are more intensely exposed than adults to pesticides and other toxins that are in food and water.⁵² Surveys undertaken by EPA have shown that children consume food with a high level of pesticide residues.⁵³

While children's risk of exposure to toxins is great, their vulnerability to the pesticides and toxic metals is especially high for several reasons. First, children behave like children, not adults.⁵⁴ They are curious and seek to learn and explore about their world utilizing all their senses. In the infancy and toddler stage of life, they exhibit hand to mouth behavior and have a natural tendency to explore.⁵⁵ Second, children's immature systems are less able to handle toxins because their organ systems are still developing.⁵⁶ Children

43. *Id.*

44. U.S. EPA, *Organophosphate Pesticide (OP) Review Process*, at <http://www.epa.gov/pesticides/op/process.htm> (last visited Feb. 10, 2003).

45. *Id.*

46. *Id.*

47. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 38.

48. Memorandum of Agreement Between EPA and Signatory Registrants Regarding the Registration of Pesticide Products Containing Chlorpyrifos, June 7, 2000. U.S. EPA, *EPA Newsroom Agreement Reached to Eliminate Dursban Pesticide for Nearly all Household Uses*, at <http://www.epa.gov/pesticides/announcement6800.htm> (last visited Jan. 26, 2003). See also Elaine Bueschen, *An Agreement Between EPA and Pesticide Manufacturers to Mitigate the Risk of Chlorpyrifos*, 31 ELR 10452 (May 2001).

49. *EPA Newsroom Agreement*, *supra* note 48.

50. U.S. EPA, *CHLORPYRIFOS REVISED RISK ASSESSMENT AND AGREEMENT WITH REGISTRANTS (2000)*, available at <http://www.epa.gov/pesticides/op/chlorpyrifos/agreement.pdf> (last visited Feb. 10, 2003).

51. Landrigan et al., *supra* note 17.

52. *Id.*

53. *Id.*

54. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 14.

55. *Id.*

56. *Id.*

37. Preston et al., *supra* note 12.

38. Landrigan et al., *supra* note 17.

39. U.S. GENERAL ACCOUNTING OFFICE (GAO), *CHILDREN AND PESTICIDES: NEW APPROACH TO CONSIDERING RISK IS PARTLY IN PLACE (2001)*, available at <http://www.gao.gov/new.items/he00175.pdf> (last visited Feb. 10, 2003).

40. Landrigan et al., *supra* note 17.

41. *Id.*

42. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 17.

are not adults in smaller sized bodies.⁵⁷ For example children absorb about 50% of the lead to which they are exposed, while adults absorb only 10% to 15%.⁵⁸ Lastly, children have more time to develop diseases that are initiated by early exposure.⁵⁹ Children's tissues and organ systems are still developing and evolving at different rates and thus they are ultra sensitive to environmental contaminants over an extended period.⁶⁰

Historically, EPA evaluated and regulated pesticides based upon an acceptable adult tolerance level and did not consider the unique vulnerabilities of children.⁶¹ However this approach changed after the publication of the 1993 NAS report, when the government sought to implement greater protection for children from pesticide harm.⁶²

IV. The Federal and State Government Response to the Risk, Exposure, and Vulnerability That Children Face

After the publication of the 1993 NAS report, the U.S. Congress passed the Food Quality Protection Act (FQPA).⁶³ The Act amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)⁶⁴ as well as the Federal Food, Drug, and Cosmetic Act (FFDCA)⁶⁵ in order to protect the public from harmful exposures to pesticides. Under the FQPA, within a 10-year period, EPA must reassess established tolerances for pesticide residues in foods.⁶⁶ In the reassessment process, EPA is required to first apply an additional tenfold safety factor in establishing tolerances to safeguard the safety of foods for children, unless reliable data support a different factor.⁶⁷ They must guarantee that there is reasonable certainty that no harm will result to children from mass exposure to a pesticide from food, drinking water, and residential sources.⁶⁸ Finally, they must consider available information concerning the cumulative effects on children of pesticides that act in a similar harmful way.⁶⁹

The FQPA is administered by EPA's Office of Pesticide Programs (OPP).⁷⁰ After the FQPA became law, EPA initially developed short-term guidelines for determining whether the additional safety factor should be applied and these initial guidelines and procedures have continued to evolve over time.⁷¹ The OPP created and still utilizes a

Safety Factor Committee which consist of scientists, managers, and other experts.⁷² This committee makes recommendations to the OPP management about applying the safety factor in individual pesticide risk assessments.⁷³ After the initial guidelines and procedures were developed, EPA developed a formal policy document that addresses applying the 10 times safety factor and other administrative policies.⁷⁴ The policy document has a broader reach than the guidelines and procedures currently followed.⁷⁵ The policy document provides more discussion about the legal framework, overall approach and related toxicology and exposure issues than the procedures and guidelines.⁷⁶ The policy document is not considered a regulation but has been released for public comment. EPA has now reviewed the public comments and in February 2002 released a final report with its response to the public feedback.⁷⁷

Since the passage of the FQPA, other measures have been taken at the federal level which recognize the risk that children face from pesticides and seek to provide greater protection for children. In 1997, President William J. Clinton issued an Executive Order⁷⁸ which required all federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. It further required that all federal agencies verify that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.⁷⁹

In addition to making the protection of children a priority, the order called for the establishment of the Task Force on Environmental Health Risks and Safety Risks to Children.⁸⁰ The task force sought to recommend strategies to protect children's environmental health and safety.⁸¹ In 1998, the task force identified four important areas for prompt action including childhood asthma, unintentional injuries, developmental disorders, and childhood cancer.⁸² The Administration of President George W. Bush continues to support the task force, and in October 2001, President Bush signed Executive Order No. 13229,⁸³ which extended the work of the task force by another 18 months. The task force will continue to evaluate current programs and develop new ones to meet its goal.⁸⁴ It identified its first task as an examination of

57. Leticia M. Diaz, *Regulating The Administration of Mood-Altering Drugs to Juveniles: Are We Legally Drugging Our Children?*, 25 SETON HALL LEGIS. J. 83, 104 (2001).

58. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 14.

59. *Id.* at 13-14.

60. *Id.* at 13.

61. Valerie Watnick, *Risk Assessment: Obfuscation of Policy Decisions in Pesticide Regulation and the EPA's Dismantling of the Food Quality Protection Act's Safeguards for Children*, 31 ARIZ. ST. L.J. 1315, 1318 (1999).

62. *Id.* at 1324.

63. Pub. L. No. 104-170, 110 Stat 1489 (1996).

64. 7 U.S.C. §§136-136y, ELR STAT. FIFRA §§2-34.

65. 21 U.S.C. §§301-396.

66. U.S. GAO, *supra* note 39, at 6.

67. *Id.* at 6. See also Watnick, *supra* note 61, at 1337.

68. U.S. GAO, *supra* note 39, at 6.

69. *Id.* at 6-7.

70. *Id.* at 8.

71. *Id.* at 9.

72. *Id.* at 9.

73. *Id.* at 9.

74. *Id.* at 17.

75. *Id.* at 12.

76. *Id.*

77. The policy document is titled Determination of Appropriate FQPA Safety Factor(s) in Tolerance Assessment. The Response to Public Comments will be available in the *Federal Register* as of Feb. 28, 2002. See U.S. EPA, *Science Policy Issues and Guidance Documents*, at <http://www.epa.gov/oppfead1/trac/science> (last visited Feb. 26, 2003).

78. Exec. Order No. 13045, 62 Fed. Reg. 19885 (Apr. 23, 1997).

79. U.S. EPA, *Executive Order on Children's Health—Office of Children Health Protection*, at http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whatwe_executiv.htm (last visited Feb. 26, 2003).

80. See *supra* note 78.

81. U.S. EPA, *President's Task Force on Environmental Health Risks and Safety Risks to Children*, at http://yosemite.epa.gov/ochp/ochpweb.nsf/content/Whatwe_fedtask.htm (last visited Feb. 26, 2003).

82. *Id.*

83. Exec. Order No. 13229, 66 Fed. Reg. 52013 (Oct. 11, 2001).

84. U.S. EPA, *President's Task Force*, *supra* note 81.

programs that combat childhood lead poisoning and the increased incidence of asthma.⁸⁵

To further enhance the commitment to protecting children from environmental health risks, EPA established the Office of Children's Health Protection (OCHP).⁸⁶ This office seeks to make the protection of children's health a fundamental goal of public health and environmental protection in the United States.⁸⁷

Congress has also responded to President Clinton's initial call to protect children. Recent proposed legislation has attempted to provide greater protections for children against environmental threats. On May 24, 1999, the Children's Environmental Protection Act (CEPA) of 1999 was introduced in the U.S. Senate.⁸⁸ CEPA while broad in scope, sought to protect children and sub-populations from exposure to environmental pollutants, including pesticide exposure in schools and to provide parents with information concerning toxic chemicals that pose risk to children, and for other purposes.⁸⁹ While this bill showed great promise and had 147 members of the House of Representatives supporting it, it was referred to the House Subcommittee on Health and Environment and did not survive the committee process.⁹⁰

The Children's Protection and Community Clean Up Act of 1999⁹¹ was another proposed bill that sought to provide additional safeguards for children. This bill included provisions on many issues related to environmental health for children and offered other protective devices to afford additional safeguards for children.⁹² This bill was referred to the House Subcommittee on Finance and Hazardous Materials. The bill as written did not survive the committee process and will not be reintroduced in the 108th Congress.⁹³

While these early efforts to legislate greater protection for children against pesticides were unsuccessful, the need to protect children from pesticide exposure at school is still being intensely pursued by legislators. Since 1999, legislators have sought to enact the School Environmental Protection Act (SEPA) recognizing the risk of harm that pesticide use in school may bring to children.⁹⁴ SEPA would require all public schools and local educational agencies to follow an Integrated Pest Management (IPM) program so to minimize the use of pesticides in schools. It also seeks to provide parents, and other interested parties with notice of the use of pesticides in schools.⁹⁵ IPM is a viable alternative to routine

pesticide use.⁹⁶ Instead of relying upon routine pesticide spraying, IPM relies on preventive measures to limit or stop pest access and further relies on monitoring to determine whether problems exist and to what degree.⁹⁷ Routine spraying is replaced by routine housekeeping such as daily room cleaning or trash pick up and maintenance strategies that eliminate pest attractions and habitats.⁹⁸ SEPA does not ban pesticide use but seeks to reduce and eliminate its use through promotion of nonchemical methods and using the least toxic pesticides.

In 1999, House Bill H.R. 3275⁹⁹ and Senate Bill S. 1716¹⁰⁰ were introduced in the 106th Congress. As written in both bills, the 1999 SEPA sought to amend FIFRA at several levels. The Act had several components that impacted the federal and state level. At the federal level, the Act established several new management and oversight bodies to develop standards and monitor the various provisions of SEPA. It required the administrator of EPA to establish a National School Integrated Pest Management Advisory System to develop and update nationwide standards for implementing IPM systems in schools.¹⁰¹ SEPA additionally mandated that the EPA administrator establish a National School Integrated Pest Management Advisory Board.¹⁰² The board had many oversight and coordination duties including the responsibility to review pesticides used in schools for their short-term and long-term toxic effects.¹⁰³ The Act also required the EPA administrator to create and fill a position for school pest management in the OPP.¹⁰⁴ This position would be responsible for the coordination of integrated pest management systems in schools.¹⁰⁵

While the Act made changes at the federal level, it also mandated changes at the state level. First, it mandated that the local educational agencies create and administer IPM systems in compliance with the Act.¹⁰⁶ Schools were also required to prohibit the application of a pesticide when the school or school grounds were occupied or in use. If an area or room was treated by a pesticide, other than a least-toxic pesticide, the school was prohibited from using the room 24 hours after the application.¹⁰⁷ The Act stated that all local educational agencies were required to maintain information about the pesticides used at each school and to make the information available to the public.¹⁰⁸ SEPA further required the school to notify parents, students, and other interested parties at the beginning of the school year that the school was using IPM.¹⁰⁹ If the school failed to provide this

85. *Id.*

86. U.S. EPA, *Our History—Office of Children's Health Protection*, at http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whowe_history.htm (last visited Feb. 26, 2003).

87. *Id.*

88. H.R. 1657, 106th Cong. (1999).

89. Leticia M. Diaz, *Prozac or Less Pesticides?—The Link Between Juvenile Violence and Pesticide Exposure*, 2 BARRY L. REV. 19, 29-30 (2001).

90. *Bill Summary & Status for the 106th Congress, H.R. 1657*, at <http://thomas.loc.gov/cgi-bin/bdquery/z?d106:h.r.1657>: (last visited Feb. 10, 2003).

91. H.R. 2956, 106th Cong. (1999).

92. Diaz, *supra* note 89, at 30-31.

93. Telephone Interview with Jessica Lenard, Legislative Assistant, Energy and Environmental Policy, to Rep. Frank Pallone (D-N.J.) (Jan. 10, 2003).

94. Telephone Interview with Kagan Owens, Program Director, Beyond Pesticides (Jan. 29, 2003).

95. H.R. 121, 108th Cong. (2003).

96. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 45.

97. *Id.*

98. *Id.*

99. H.R. 3275, 106th Cong. (1999).

100. S. 1716, 106th Cong. (1999).

101. *Bill Summary & Status for the 106th Congress, S. 1716*, at <http://thomas.loc.gov/cgi-bin/bdquery/z?d106:s1716>: (last visited Feb. 10, 2003).

102. *Id.*

103. *Id.*

104. *Id.*

105. *Id.*

106. *Id.*

107. *Id.*

108. *Id.*

109. *Id.*

universal notification, then they were prohibited from using a pesticide.¹¹⁰

The Act also addressed what procedures must be followed if a pest was unable to be controlled via the IPM system or the least-toxic pesticides.¹¹¹ These procedures included notifying parents and other interested parties of future spraying when used and posting warning signs after the application.¹¹² The Act had very specific requirements about time of posting and sign content.¹¹³

The Act established civil penalties but did have a cap on the amount of fine that could be leveled for violations of specific provisions in the Act.¹¹⁴ The Act created an IPM Trust Fund which was funded by the civil penalties paid by offenders.¹¹⁵ The trust fund sought to remedy the harm caused by offenders by funding education, training, and other developmental activities used by IPM systems in schools.¹¹⁶ The provisions in the Act provided immediate short-term protection and were excellent initial steps to protect children.

SEPA of 1999 did not progress out of the committee process and failed to come to the House or Senate floor for a vote.¹¹⁷ However, legislators tried again in the 107th Congress to pass SEPA. The SEPA of 2002 was not introduced as an independent standing bill but was added as an amendment to the Senate Elementary and Secondary Education Act Authorization Bill¹¹⁸ and a House bill.¹¹⁹ The SEPA amendment of 2002 was withdrawn from these bills in the committee process and again failed to be enacted by legislators.¹²⁰

After the 107th Congress failed to enact SEPA of 2002, the SEPA of 2003 was introduced in the 108th Congress as House Bill H.R. 121.¹²¹ The bill was referred to the House Committee on Agriculture.¹²² In previous years, SEPA has encountered opposition in the House Committee on Agriculture but the bill sponsor Rep. Rush Holt (D-N.J.) has affirmed his commitment to the bill and its goal of protecting children from pesticide harm.¹²³

While the federal government has struggled to pass legislation that seeks to protect children from pesticide usage, many states, including Representative Holt's home state of New Jersey, have passed laws that seek to protect children from pesticide threats. A survey of state laws regarding pesticides and their use in schools indicates that seven states recognize the importance of controlling toxic drift by limit-

ing pesticide applications in areas located near a school.¹²⁴ Moreover, 16 states require posting of signs when a school applies pesticides indoors, and 25 states require sign notification when pesticides are applied on the school grounds.¹²⁵ Further, 21 states require that schools provide prior written notice to students, parents, and staff before a pesticide is applied, and IPM systems, in some form, are recommended or required in 16 states.¹²⁶

The Montgomery County, Maryland, public school IPM program is a school district that has successfully implemented IPM and which now serves as a model program that other schools study.¹²⁷ The Montgomery County IPM program has been implemented at 200 sites.¹²⁸ In 1985, the 200 sites used 5,000 applications of pesticides.¹²⁹ The county implemented the IPM program and four years later no pesticides were used. This practice saved the school district \$1,800 per school and \$30,000 at the food service warehouse.¹³⁰ Currently over 150 schools districts nationally have policies or programs that utilize one or more IPM provision, such as posting notifications of pesticides, providing parents with prior notification of planned pesticide usage, and prohibiting use of some pesticides.¹³¹ The national trend indicates that more schools are seeking to adopt IPM policies.¹³² It is obvious that IPM has a successful history of reducing and eliminating pesticide usage in schools. Hopefully this successful record at the state level will be noted by legislators as they debate and review the SEPA of 2003. The passage of H.R. 121 would establish a federal policy regarding pesticide use and provide tremendous protection for children throughout the United States against the dangers of environmental toxins.

V. Conclusion

Society continues to seek out an explanation for the increasing number of children who exhibit learning and behavioral difficulties. Scientific studies continue to document links between environmental contaminants and behavioral and learning difficulties in children. Pesticides and toxic metals are one of the many contaminants that children are exposed to through their daily activities at school, home, and play.¹³³ Studies of pesticides, such as chlorpyrifos, have shown the

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.*

118. Sen. Amend. 805, 107th Cong. (2001) (amendment to S. 1).

119. H.R. 2859, 107th Cong. (2001) (the amendment was attached to a bill suspending a duty on a chemical.).

120. Owens Interview, *supra* note 94.

121. H.R. 121, 108th Cong. (2003).

122. *Bill Summary & Status for the 108th Congress, H.R. 121*, at <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:hr121>: (last visited Feb. 10, 2003).

123. Telephone Interview with Jim Kapas, Press Secretary to Rep. Rush D. Holt (D-N.J.) (Jan. 29, 2003).

124. KAGAN OWENS & JAY FELDMAN, *THE SCHOOLING OF STATE PESTICIDE LAWS—2002 UPDATE* (2003), available at http://www.beyondpesticides.org/schools/publications/School_report_update_2002.pdf (last visited Feb. 26, 2003). This report chronicles and reviews state pesticide laws pertaining to pesticide use in school. The comparison illustrates the wide range of diversity of laws with some states having little to no protection for children but others having much more stringent laws. For example, Massachusetts is the most stringent state. First, it prohibits pesticide use when children are present. It further prohibits the use of some indoor pesticides and prohibits the use of the most dangerous outdoor pesticides. It requires the school to provide notification to parents and staff of pesticide use and it further requires all schools use IPM policies.

125. *Id.*

126. *Id.*

127. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 45.

128. *Id.*

129. *Id.*

130. *Id.*

131. *Id.* at 44.

132. *Id.* at 46.

133. Landrigan et al., *supra* note 17.

damaging effects that pesticides have on the developing bodies and organ systems of children.¹³⁴

As a result of the above-stated studies, state and federal legislators have noted that children have greater susceptibility to pesticide harm and sought to enact legislation and direct resources to ensure that children are protected from the hazards of pesticide exposure.¹³⁵ The passage of the FQPA in 1996 was probably the first step in a series of federal efforts to respond to the growing number of scientific studies that highlight the unique dangers that children face from exposure to pesticides. Although many of their efforts and laws appear to be evolving, much more remains to be done to secure greater protections for children.

While the federal efforts are slowly emerging, many states have taken initiative and passed legislation that seeks to protect children from one of the greatest sources of pesticide harm they face, the school environment.¹³⁶ Hopefully as science continues to study and prove the correlation between the cumulative effects of pesticide and toxic metals exposure to children's behavioral difficulties, federal and state legislators will pass legislation that protects children from these harmful contaminants.

These environmental contaminants capture and place children in a vicious and often life-changing cycle. First, they are exposed to a multitude of environmental contaminants through daily activities at school, home, and play areas.¹³⁷ Their developing bodies are unable to handle these contaminants and, consequently, suffer adverse effects, which include, but are not limited to, impaired cognitive development and physical damages, such as brain damage.¹³⁸ The children, due to these adverse effects often experience behavioral, educational, and emotional problems and have difficulty learning or exhibit other anti-social behavior.¹³⁹ Often such anti-social behavior is exhibited in schools and punished by strict policies—such as zero tolerance—when

such punished behavior may be environmentally caused.¹⁴⁰ In response to their children's behavior at school, concerned parents seek help for their children. In visiting their family doctor, they encounter a medical community that quickly prescribes a mood-altering drug which attempts to alleviate the problems caused by the environmental contaminants. But this cure may be another form of chemical poisoning in their developing bodies.¹⁴¹

While this cycle may seem unrealistic to many, the U.S. Court of Appeals for the Ninth Circuit noted in the recent case *Caro v. Woodford*¹⁴² that the counsel of a criminally accused defendant was ineffective for failing to investigate the effects of his troubled background of childhood abuse and lifelong exposure to neurotoxins on his mental capacity.¹⁴³ The court acknowledged that pesticide exposure may have lead to the defendant's aggressive behavior,¹⁴⁴ and remanded the case to the district court to hold an evidentiary hearing to determine if the defendant suffered brain damage due to his exposure to neurotoxicants and his personal background. The district court found that brain damage had been sustained and vacated the defendant's death sentence and ordered a new trial.¹⁴⁵ The *Caro* case illustrates that the evolving cycle of environmental poisoning of children is not fiction, but instead a reality that can no longer be ignored. Society must respond with all possible haste to stop the systemic cycle of environmental poisoning and punishment that children face today.

134. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 38.

135. H.R. 121, 108th Cong. (2003).

136. CHILD PROOFING OUR COMMUNITIES CAMPAIGN, *supra* note 20, at 46.

137. *Id.* at 13-14.

138. Preston et al., *supra* note 12.

139. *Id.*

140. Starr, *supra* note 9.

141. Siler, *supra* note 1.

142. 280 F.3d 1247, 1249-50 (9th Cir. 2002). Fernando Caro from birth was exposed to pesticides. His parents were farm workers and as a child he played in pesticide soaked fields. The house he lived in was surrounded by pesticide covered agricultural fields, and the house was not shielded from pesticides that were dropped by aerial spraying. His home environment was further poisoned as his family used water that was contaminated by pesticides to cook, clean, and bathe. As a teenager, he also had exposure to more pesticides as he worked for a crop dusting company. While Caro had other factors that may have contributed to his aggressive behavior, the court noted his long-standing history of pesticide exposure. He was sentenced to death for first-degree murder.

143. Case Law Development, 26 MENTAL & PHYSICAL DISABILITY L. REP., May/June 2002, at 439.

144. *Id.*

145. *Id.*