Insufficient Accountability: Case Study of the Recycling Plan of a Public Interest Research Group

David E. Seidemann
Yale University; Brooklyn College

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INSUFFICIENT ACCOUNTABILITY: CASE STUDY OF THE RECYCLING PLAN OF A PUBLIC INTEREST RESEARCH GROUP

DAVID E. SEIDEMANN

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* The author is a Research Affiliate at Yale University and a Professor of Geology at Brooklyn College. He earned his B.S. at the State University of New York at Stony Brook, and his M.Phil. and Ph.D. at Yale University. He has published studies dealing with metal pollution, science and public policy, and geochronology in scientific journals during his 20 year career as a researcher.
I. Introduction

Over the past several decades, as the public's faith in the capacity of government and industry to behave responsibly has diminished, the public has turned increasingly to environmental advocacy groups for help in holding government and industry accountable. Environmental groups have become useful watchdogs because they have both the technical expertise and the inclination to monitor those segments of society in which the public has lost faith (i.e., government and industry). As the public's trust in environmental groups has increased, so has the ability of these groups to influence public policy through the research reports they issue.1

The case of the Natural Resources Defense Council (NRDC) study of the possible carcinogenicity of the agricultural chemical Alar illustrates the impact that the research of environmental groups can have on public opinion and, by extension, on public policy. NRDC's Alar study received widespread news media coverage, including a story by "60 Minutes" and press conferences by the actress Meryl Streep.2 Consumer reaction to the Alar study cost apple growers $200 million.3 In the midst of the publicity, the U.S. Environmental Protection Agency (EPA), prompted perhaps by the intense public concern generated by the NRDC study, released an interim report on the toxicity of a chemical byproduct of Alar.4

The significant impact of the NRDC's Alar study is not surprising given evidence that the public is extremely sensitive to reports that it is at risk. There can perhaps be no better example of the public's sensitivity to potential dangers than the case involving Motorola

3 Bill Breen, Dueling Quotes, GARBAGE, Spring, 1994 at 40.
4 Marshall, supra note 2.
cellular phones. In a 1993 appearance on "Larry King Live," a man from Florida attributed the death of his wife from brain cancer to her frequent use of a Motorola cellular phone. Despite its anecdotal nature, the report was publicized widely, which resulted in a precipitous decline in the value of Motorola stock. The public's reaction to this man's claim suggests the potential of environmental groups to sway public opinion: if the public is so attentive to the opinion of a single layman, it is to be expected that the public's views and behavior can be significantly shaped by organizations that command respect for their expertise and sentiments.

While the impact of the research of environmental groups on press coverage and public opinion helps change policy indirectly, the influence of this research on the courts provides a more direct means of affecting policy. A ruling by a Federal District Court in California that allows the NRDC to monitor the storm water management plan of the California Transportation Department illustrates this point. Indeed, the ruling, which grants the NRDC access to the transportation agency's personnel and records and allows the group to hire an outside expert, appears to confer quasi-governmental status on the environmental group.

The influence of the research of environmental groups on the decisions of government agencies represents another means by which these groups may directly affect public policy. The EPA's reliance on the research of Greenpeace into the health hazards of chlorine and its

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5 This phenomenon is also dramatically demonstrated by the public concern and expense that was prompted by an earthquake prediction issued by a self-professed climatologist on the basis of a discredited theory. Pseudoscience to a Fault, GEOTIMES, July 1994, at 16.

6 Curing Cellular's Health Scare; Cellular Radio Industry to Address its Electromagnetic Field Health Hazard Concern, CELLULAR BUSINESS, May 1993, at 22.

compounds has been cited as an example of this phenomenon.\footnote{Philip H. Abelson, \textit{Chlorine and Organochlorine Compounds}, 265 \textit{Science} 1155 (1994); Ivan Amato, \textit{Crusade to Ban Chlorine}, \textit{Garbage}, Summer, 1994, at 30.}

Environmental groups, of course, are not the only source of influential research: the research of the academic community, industry, and government helps shape policy as well. However, the research of environmental groups differs from that of the other sectors in one important respect: mechanisms of oversight (both formal and informal) exist for the research of the academic community, industry, and government, but are largely absent for the research of environmental groups. Peer-reviewed publication is the prime means of independent oversight for academic research. Government agencies, environmental watchdogs, the news media, and a distrustful public establish a degree of oversight for the research of industry and government. In contrast, the research of environmental groups is not routinely subject to the scrutiny of independent experts. Their research is typically disseminated through position papers, research studies, and letters reported in the popular press. Thus, unlike research within the academic community, the research of environmental groups is not generally subject to the degree of expert scrutiny inherent in publication in peer-reviewed journals. The news media have not filled this gap in quality control: they do not have the expertise to check the quality of the research of environmental groups, nor do they routinely seek the help of disinterested experts to verify its quality. Further, neither the government nor the academic community monitors research from environmental groups, and the criticism of industry is often dismissed as that of a vested interest. Ironically, environmental advocacy groups, whose very existence demonstrates the value of independent monitoring, enjoy a \textit{de facto} immunity from scrutiny.

The lack of effective oversight for the research of environmental groups is risky. While these groups may serve the public as watchdogs, it should be remembered that they have interests (e.g.,
their financial well-being) which do not coincide with those of the public. In the absence of effective scrutiny, environmental groups may be tempted to use their research as a public relations tool rather than as a means of understanding environmental problems. In this paper I demonstrate the dangers of insufficient oversight by presenting a case study of an environmental group's recycling plan.

II. Background

Like many other cities, New York faces a crisis in solid waste management. The city generates approximately 27,000 tons of solid waste per day. Although a law passed by the City Council in 1989 mandated that New York City recycle 25% of its solid waste by 1994, the city has fallen short of that goal, recycling only 15% of its residential waste as of February 1994. Most of the city's remaining waste is disposed of in the Fresh Kills landfill, the only currently active landfill in New York City. A small proportion of city waste (about 5%) is incinerated. Because its only active landfill may reach capacity by the year 2000, within the next decade New York City will be forced to make some difficult policy decisions: the city must evaluate the three remaining means of waste disposal (recycling, incineration and export) in order to arrive at a waste management policy that accommodates the closure of its last landfill.

In 1986, the New York Public Interest Research Group (NYPIRG) issued a report addressing New York City's waste

12 Id.
13 Department of Sanitation, supra note 9, at i.
disposal problem.\textsuperscript{14} NYPIRG is a research and advocacy group, one of many PIRGs throughout the country. In its report, NYPIRG presents its case against incineration and proposes a plan, entitled "Total Recycling," for recycling 60-90\% of New York City's solid waste. NYPIRG claims that the implementation of its plan may obviate the need for building incinerators: the group therefore recommends that a five-year moratorium on the building of incinerators be declared as "Total Recycling" is phased in and evaluated.\textsuperscript{15} According to NYPIRG, a slightly modified version of this plan could serve as an ideal solution to waste disposal problems throughout New York State and the nation.\textsuperscript{16}

NYPIRG submitted its "Total Recycling" plan to Governor Cuomo, state-legislative leaders, and other officials for consideration,\textsuperscript{17} and held a presentation of the plan in the parlor of the State Assembly.\textsuperscript{18} Apparently NYPIRG's lobbying efforts were successful: starting in 1987, a series of bills mandating a program with a goal of recycling between 60\% and 90\% of New York State's waste was introduced to the State Legislature.\textsuperscript{19} These bills were drawn directly from the NYPIRG research report.\textsuperscript{20} A state

\textsuperscript{14} WALTER L. HANG & STEVEN A. ROMALEWSKI, NEW YORK PUBLIC INTEREST RESEARCH GROUP, THE BURNING QUESTION: GARBAGE INCINERATION VS. TOTAL RECYCLING IN NEW YORK CITY 185 (1986).

\textsuperscript{15} Id. at 165.

\textsuperscript{16} Id. at 151.

\textsuperscript{17} Steven A. Romalewski, New York Public Interest Law Group, The Burning Question: Garbage Incineration vs. Total Recycling in New York State, 7 AGENDA FOR CITIZEN INVOLVEMENT 2 (July 1986) (reprint).


\textsuperscript{20} Telephone interviews with John Kreutz, Office of New York State Senator Kenneth P. LaValle (Oct. 29, 1991), and JoAnn Volk, Office of New York State
legislative proposal calling for a five-year moratorium on incineration was apparently based on NYPIRG's recommendation as well. New York City legislative proposals also appear to be modeled on NYPIRG's research: in 1989, the New York City Council considered (and narrowly rejected) legislative amendments calling for a five-year moratorium on incineration and for recycling at least 60% of waste in ten years.

The introduction of bills drawn from NYPIRG's research confirms the view, expressed by the New York Times, that NYPIRG is influential in waste management matters in New York. NYPIRG claims influence over waste management policy outside New York as well: in a New York Times article, a NYPIRG official asserted, "[W]e've stalled the Brooklyn Navy Yard project, we've blocked a plant in Cranston, R.I., we helped stop the one in Lowell [Mass.]".

As the above suggests, NYPIRG's recommendations may help define the waste management policy that is ultimately adopted in New York, and perhaps elsewhere. This would be unfortunate: I will demonstrate in this article that NYPIRG's report on waste management in New York City inflates the city's capacity for recycling, exaggerates the existence of markets, and minimizes the projected costs through the use of altered data, specious arguments and conjecture.

Assemblyman Sheldon Silver (March 17, 1992).


22 N. Y. City Council Bill 952A(Amndments). The amendment calling for at least 60% recycling was rejected by a vote of 18-13, and the amendment establishing a five-year moratorium on incineration was rejected by a vote of 17-13 at the Council meeting of March 28, 1989. Id.


III. An Exaggerated Recycling Capacity

In its report NYPIRG characterizes its recycling program as a "step-by-step 'Total Recycling' plan of action to recycle between 60 and 90 percent of New York's garbage." As described in detail below, neither the lower nor the upper limit in NYPIRG's projected range for recycling is based on legitimate analysis. The 64% lower limit is an exaggeration derived through the unexplained alteration of data. The 90% upper limit is an arbitrary assertion: it is not, as NYPIRG claims, derived through the analysis presented in its "step-by-step" recycling plan.

A. The 64% Lower Limit: An Inflated Figure

Table 48 from the NYPIRG report summarizes its "Total Recycling" program. In this program, NYPIRG describes individual components of New York City's waste stream, estimates the amount of each that can be recycled, evaluates the potential costs, and proposes a schedule of implementation. Through adoption of this program, NYPIRG claims that the city has the ability to reduce and recycle 17,235 tons per day (TPD) of waste, or 64% of its waste stream. This figure apparently serves as the basis for the lower limit in the 60-90% waste reduction that NYPIRG projects for New York City.

NYPIRG's estimate that New York City can recycle 17,235 TPD of waste is based in part on the requirement that the city recycle 3160 TPD of its park waste (leaves and grass at city parks). Park waste, together with leaves and grass collected outside parks, constitutes the city's "yard waste." Figures available at the time that the NYPIRG plan was put forth suggested that the city generates

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25 HANG & ROMALEWSKI, supra note 14, at 160.
26 Id. at 160, 161.
27 Id.
about 1183 TPD of yard waste:28 park waste, as only one of the constituents of yard waste, must be less than this amount. Thus, NYPIRG's 3160 TPD figure for park waste was clearly an invalid representation of New York City's capacity for recycling this material because it exceeded by at least 1977 TPD the amount of park waste that the city was estimated to generate at the time.

The source for NYPIRG's unachievable requirement that New York recycle more park waste than it generates can be found in the text of NYPIRG's report. In a section entitled "Park Waste," NYPIRG suggests that New York City should begin a composting program for leaves, grass clippings, and other organic park waste at three of its largest parks, and eventually expand the program to all of the city's parks and recreational areas. Appropriately, NYPIRG indicates the amount of land needed to compost leaves; it presents a diagram depicting a typical project for composting leaves and grass; it describes a program in New Jersey that composted leaves, grass clippings, and other park wastes; and it describes potential markets for materials generated by park waste composting. Yet when NYPIRG estimates the amount of waste reduction that may be accomplished by its park waste program, it includes without explanation New York City's food waste in the calculation, as the following excerpt demonstrates:

The City should set a goal of recycling approximately half of its park and food waste by implementing the park waste composting projects described below. As a result, this program should be designed to recycle 3,160 tons per day, or approximately 12 percent of the City's waste.30

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28 Assuming that 4.4% of the waste stream is yard waste, as specified in FRANCIS A. DOMINO, ENERGY FROM SOLID WASTE: RECENT DEVELOPMENTS 319, at 126 (1979).
29 HANG & ROMALESKI, supra note 14, at 134.
30 Id.
The brief and unexplained reference that NYPIRG makes to food waste in its detailed description of park waste recycling obscures its significance to NYPIRG's program. Recycling half of the city's park waste, as called for in the plan, accounts for at most 592 TPD of the 3160 TPD that NYPIRG claims may be recycled by park waste composting projects: the remaining 2568 TPD is in fact food waste. Given that NYPIRG never explains how a program designed for recycling leaves and grass at city parks can be used to recycle food waste, the inclusion of New York's food waste in NYPIRG's estimate of park waste recycling is unjustified. Further, when NYPIRG tabulates the total amount of waste reduction that New York could accomplish under its "Total Recycling" Program it attributes 3160 TPD of waste exclusively to a category labeled "Park Waste," which is described as "composting of grass and leaves at city parks." There is no hint that at least 2568 TPD of this figure is in fact attributed to the recycling of food waste. Indeed, the only mention of food waste reduction in the tabulation occurs in a separate category labeled "Organic Waste," which is to be separated mechanically and composted.

The indication in NYPIRG's tabulation of recycling potential that 3160 TPD of waste may be reduced solely by composting half of New York's park waste is invalid: it overestimates by at least 2568 TPD the amount of waste reduction that can be accomplished. The 64% total reduction in waste (17,235 TPD) that NYPIRG claims can be accomplished under its plan must be adjusted downward to accommodate the unwarranted and unacknowledged inclusion of food waste in the park waste category. The corrected figure that results is 14,667 TPD, or 55% of the total waste stream.

31 DOMINO, supra note 28, at 126.
32 HANG & ROMALEWSKI, supra note 14, at 161.
33 Id. at 161.
B. 90% Recycling: An Arbitrary Figure

NYPIRG characterizes its recycling program as a "step-by-step" plan to recycle between 60 and 90 percent of New York City's waste. The lower limit in this projection is based on the detailed plan that NYPIRG describes in its report, which accounts for 64% (incorrectly, as noted above) of the waste stream. Nowhere in its report, however, does NYPIRG present a step-by-step plan that demonstrates how New York could recycle 90% of its waste, the upper limit in NYPIRG's waste reduction program. NYPIRG's "justification" for the 90% figure apparently rests solely on an allusion to the possibility that New York could reduce its waste stream beyond the 64% figure projected in NYPIRG's detailed plan. The entire three-sentence "justification" follows:

Many other materials also could be recycled, thereby creating even greater potential for waste reduction in years to come. These materials include, but are not limited to: telephone books, fabric, rubber tires, wood and bulky items (such as automobiles). Recycling these materials, in conjunction with the systematic implementation of the programs described in this chapter, could ultimately reduce the city's waste output by as much as 90 percent and perhaps even higher.

This hardly constitutes the "step-by-step" plan for achieving 90% recycling that is claimed by NYPIRG in its report and throughout its promotional literature. Indeed, even if New York City recycled 100% of the materials that NYPIRG lists in its brief speculation on

34 Id. at 160.
35 Id. at 161.
36 Id. at 150.
37 Id. at 160.
recycling possibilities, the total amount of additional waste reduction that could be accomplished is no greater than 10%, as shown in Table 1, below.

Table 1. Additional Potential Waste Reduction Specified by NYPIRG

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Quantity in Waste Stream (TPD)</th>
<th>Proportion in Waste Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Books</td>
<td>22</td>
<td>0.08%&lt;sup&gt;38&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fabric</td>
<td>815</td>
<td>3.03%&lt;sup&gt;39&lt;/sup&gt;</td>
</tr>
<tr>
<td>Rubber Tires</td>
<td>85</td>
<td>0.32%&lt;sup&gt;40&lt;/sup&gt;</td>
</tr>
<tr>
<td>Wood</td>
<td>718</td>
<td>2.67%&lt;sup&gt;41&lt;/sup&gt;</td>
</tr>
<tr>
<td>Bulky Items</td>
<td>1010</td>
<td>3.76%&lt;sup&gt;42&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2650</strong></td>
<td><strong>9.86%</strong></td>
</tr>
</tbody>
</table>

Thus, even if one accepts NYPIRG's invalid lower limit for recycling of 64%, the additional items NYPIRG lists would raise the total waste reduction to only 74%. Fully 16% of the 90% waste reduction that NYPIRG claims is possible is unaccounted for, that is, comprised of recycling that NYPIRG does not mention specifically in its report, much less support in a "step-by-step" plan. The 90% upper limit of NYPIRG's "Total Recycling" plan is an arbitrary

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<sup>39</sup> DEPARTMENT OF SANITATION, THE CITY OF NEW YORK, 2 THE WASTE DISPOSAL PROBLEM IN NEW YORK CITY: A PROPOSAL FOR ACTION 57, Table 2.1-7 (1984) [hereinafter, PROPOSAL FOR ACTION].


<sup>41</sup> PROPOSAL FOR ACTION, supra note 39, Table 2.1-7.

<sup>42</sup> DEPARTMENT OF SANITATION, supra note 9, at 28.
Underestimating the Costs of Its Plan

NYPIRG asserts that its plan is economically feasible.\textsuperscript{43} This assertion is brought into question because NYPIRG underestimates the costs of its plan through the means described below.

A. Underestimating the Number of Recycling Plants

NYPIRG's "Total Recycling" program requires that a network of mechanical separation plants be used to remove 6000 TPD of organic waste from New York's waste stream.\textsuperscript{44} This amount of organic waste is to be extracted from that portion of the city's waste that remains after implementation of NYPIRG's other projects to remove paper, containers, and park waste before they enter the waste stream (i.e., source reduction).\textsuperscript{45} The amount of waste that remains in the waste stream after implementation of NYPIRG's source reduction project is 18,223 TPD, as shown below in Table 2.

Table 2: The Effect of NYPIRG's Source Reduction Plan on the New York City Waste Stream

<table>
<thead>
<tr>
<th>Material</th>
<th>Initially in the Waste Stream (TPD)\textsuperscript{46}</th>
<th>Removed by Source Reduction (TPD)\textsuperscript{47}</th>
<th>Remaining After Source Reduction (TPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>2060</td>
<td>1545</td>
<td>515</td>
</tr>
</tbody>
</table>

\textsuperscript{43} HANG \& ROMALEWSKI, supra note 14, at 7.
\textsuperscript{44} Id. at 161.
\textsuperscript{45} Id. at 146.
\textsuperscript{46} Id. at 116.
\textsuperscript{47} Id. at 160, 161.
<table>
<thead>
<tr>
<th>Material</th>
<th>TPD</th>
<th>TPD</th>
<th>TPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Paper</td>
<td>670</td>
<td>600</td>
<td>70</td>
</tr>
<tr>
<td>Cardboard</td>
<td>2670</td>
<td>2000</td>
<td>670</td>
</tr>
<tr>
<td>Mixed Paper</td>
<td>5910</td>
<td>0</td>
<td>5910</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>1183</td>
<td>592</td>
<td>592</td>
</tr>
<tr>
<td>Food Waste</td>
<td>5137</td>
<td>0</td>
<td>5137</td>
</tr>
<tr>
<td>Containers (glass, metal and plastic)</td>
<td>3361</td>
<td>2870</td>
<td>491</td>
</tr>
<tr>
<td>Non-Container Glass, Metal and Plastic</td>
<td>884</td>
<td>0</td>
<td>884</td>
</tr>
<tr>
<td>Construction Debris</td>
<td>1185</td>
<td>1060</td>
<td>125</td>
</tr>
<tr>
<td>Textiles</td>
<td>810</td>
<td>0</td>
<td>810</td>
</tr>
<tr>
<td>Wood</td>
<td>730</td>
<td>0</td>
<td>730</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2289</td>
<td>0</td>
<td>2289</td>
</tr>
<tr>
<td>Total</td>
<td>26,889</td>
<td>8667</td>
<td>18,223</td>
</tr>
</tbody>
</table>

All of the 18,223 TPD of remaining waste must be processed by mechanical separation plants in order to remove that part of the waste stream (i.e., 6000 TPD of organic waste) that NYPIRG designates for separation in its program.

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48 Assuming that 4.4% of the waste stream is yard waste, as specified in DOMINO, supra note 28, at 126.
49 Assuming that only park waste and not food waste is recycled in NYPIRG's park waste program.
50 Calculated by subtracting 1183 TPD of yard waste from the 6320 TPD specified for the combined category of yard/food waste reported in HANG & ROMALEWSKI, supra note 14, at 116.
51 DEPARTMENT OF SANITATION, supra note 9, at 45.
52 Calculated by subtracting containers from the total for glass, metal and plastic specified in RECYCLING STRATEGIES, supra note 40, at Exhibit II-3.
In its report, NYPIRG indicates that each of the mechanical separation plants it proposes will have a capacity of 1200 TPD.\(^5\) (The plants were modeled on a 1200 TPD plant in Rome\(^5^4\) that incinerated 35%-40% of the waste it took in and recovered metals, paper, plastic and compost from the remainder).\(^5^5\) Thus, 15 such plants would be required to process the 18,223 TPD that remain in the waste stream after source reduction, and thereby to remove the 6000 TPD of organic waste specified in NYPIRG's program.

NYPIRG's program, however, calls for the construction of only five 1200-TPD plants, ten fewer than are necessary to accomplish the requisite task.\(^5^6\) NYPIRG's underestimation is apparently based on the false premise that the capacity of a plant is a measure of the amount of useful material a plant yields, rather than how much waste it takes in: NYPIRG's five 1200-TPD plants are capable of taking in a total of 6000 TPD of unseparated waste, not of yielding 6000 TPD of separated organic waste.

Thus, NYPIRG's assertion that five 1200-TPD plants would be required to separate 6000 TPD of organic waste from New York's waste stream is an underestimation based on specious reasoning. The actual number of 1200 TPD plants required for this separation is 15, given that 18,223 TPD of the waste stream must be processed (see Table 2, above) in order to yield 6000 TPD of recovered organic waste.

B. An Invalid Figure for Waste Paper

As described below, NYPIRG misrepresents the amount of waste paper to be processed by recycling plants, resulting in an

\(^{53}\) HANG & ROMALEWSKI, supra note 14, at 147.

\(^{54}\) Id. at 147.

\(^{55}\) Enclosures with letter from Pietro Carrera of Sorain Cecchina S.p.A. Rome, Italy to David E. Seidemann, Department of Geology and Geophysics, Yale University (August 31, 1989).

\(^{56}\) HANG & ROMALEWSKI, supra note 14, at 147.
underestimation of the costs of its plan.

The separation plants that NYPIRG proposes in its report are designed to remove materials that remain in the waste stream after implementation of its source reduction program. In characterizing the composition of the waste stream after source reduction NYPIRG states that "5910 tons per day of waste paper will still be left in the waste stream". In fact, the figure NYPIRG reports for waste paper is 1255 TPD smaller than the actual quantity of waste paper remaining in the waste stream. The 5910 TPD figure that NYPIRG cites only refers to mixed paper (see Table 2, above). The newspapers (515 TPD), office paper (70 TPD), and cardboard (670 TPD) that remain in the waste stream after NYPIRG's source reduction program are simply ignored (see Table 2, above). The exclusion of these components is neither explained nor justified.

As described in an earlier section, NYPIRG improperly assumes that the number of separation plants required in its program is determined by the amount of useful waste to be extracted, rather than the total amount to be processed. For the sake of argument, however, let us assume that NYPIRG's reasoning in this regard is valid. It then follows that NYPIRG's misrepresentation of the amount of waste paper in the waste stream would result in an underestimation of the number and therefore cost of separation plants required in its program. Within the framework of NYPIRG's faulty logic, the group's indication that five 1200 TPD plants are required to remove 6000 TPD of waste would have to be increased to six plants, if the valid figure of 7165 TPD were used for waste paper. As noted previously, however, the use of both sound reasoning and valid data would lead to the conclusion that 15 plants are actually required for NYPIRG's program.

57 Id. at 146.
58 Id. at 146.
59 Id. at 147.
C. Recycling Organic Waste: An Arbitrary Cost Reduction

Another way in which NYPIRG underestimates the costs of its plan is through the unexplained alteration of data, as outlined below.

In the text of its report, NYPIRG proposes that five plants, each with an annual cost of $14.6 million, be built over a 10-year period in order to extract 6000 TPD of organic waste. As seen above, NYPIRG's estimate that only five plants are required is based on faulty reasoning. For the sake of argument, however, let us assume that NYPIRG's figure is correct. It then follows that the ultimate cost of removing 6000 TPD of organic waste, using five separation plants, would be $73 million annually. But in the summary of its "Total Recycling" plan, NYPIRG indicates that its 10-year program to remove 6000 TPD of organic waste would ultimately cost $29 million annually (for two plants) rather than $73 million annually (for five plants). The reduction in cost and number of separation plants that appears in the project summary is not addressed, much less justified, anywhere in the NYPIRG report.

The actual cost for removing 6000 TPD of organic waste, using the 15 plants shown here to be necessary, would be $219 million annually ($14.6 million for each plant), far higher than the $73 million cost for the program NYPIRG describes in the text of its report, or the $29 million cost it lists in the project summary.

D. Underestimating the Cost Per Ton of Pilot Projects

According to NYPIRG, its "Total Recycling" plan is less

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60 Id. at 149.
61 Id. at 146, 147.
62 This figure is derived by multiplying the $14.6 million cost for each plant (specified in HANG & ROMALEWSKI, supra note 14, at 149) by the five plants specified as necessary (HANG & ROMALEWSKI, supra note 14, at 147).
63 HANG & ROMALEWSKI, supra note 14, at 161.
costly than the incineration plan presented by New York City.\textsuperscript{64} For the initial stages of "Total Recycling," NYPIRG calculates a cost of $23.09 per ton of waste reduction, and compares it to a cost of $40.20 per ton projected for the incineration of waste in the city's plan.\textsuperscript{65} However, as noted below, the cost of NYPIRG's pilot projects are underestimated as the result of the use by NYPIRG of the false premise that the capacity of a recycling plant is a measure of the amount of useful material a plant yields, rather than how much waste it takes in.

NYPIRG restricts its calculation of the cost per ton to pilot projects designed to recycle one third of its program's ultimate recycling goal. NYPIRG specifies that 2.1 million tons per year (5753 TPD) would be recycled in these pilot projects at an annual cost of $48,426,000, and thus calculates a cost of $23.09 per ton.\textsuperscript{66} To recycle the amount specified in the calculation, the NYPIRG plan requires the construction of two mechanical separation plants,\textsuperscript{67} each with a capacity of 1200 TPD. As noted earlier, NYPIRG mistakenly assumes that the capacity of these plants is an indication that they would yield 2400 TPD of useful materials rather than take in that amount of unseparated waste. In fact, in order to yield 2400 TPD of useful material, plants must process 7200 TPD, given that useful material constitutes about a third of the waste stream to be processed (see Table 2, above). Thus six plants, not two, are required to yield the amount of waste reduction specified in NYPIRG's calculation of cost per ton.

The calculation of cost per ton must be adjusted to correct for NYPIRG's underestimation of the number of separation plants by adding $58.4 million for four additional plants to NYPIRG's original $48.4 million total\textsuperscript{68} (which included $29.2 million for two

\textsuperscript{64} Id. at 151.
\textsuperscript{65} Id.
\textsuperscript{66} Id.
\textsuperscript{67} Id. at 119.
\textsuperscript{68} Id. at 151.
plants\textsuperscript{69} and $19.2 million in other costs).\textsuperscript{70} The cost per ton for NYPIRG's pilot projects calculated in this way rises from $23.09 to $50.86. The cost of NYPIRG's pilot projects, correctly calculated, no longer compares favorably to the $40.20 per ton cost projected for the incineration of waste in New York City's plan.

V. The Size of Markets for Park Waste: An Exaggeration

The success of a recycling program partly depends on the existence of markets for materials removed from the waste stream. In asserting the feasibility of its plan, NYPIRG uses specious reasoning that exaggerates the size of New York City's market for recycled park waste.

NYPIRG notes that New York City landfills require 1850 to 1900 TPD of cover each day.\textsuperscript{71} The research group asserts that this market could accommodate much of the 3160 TPD of compost that it claims (incorrectly, as noted above) would be generated under its park waste reduction program. But New York landfills require 1900 tons of cover each day only when they are active. Because NYPIRG's recycling program is designed to reduce the waste stream by at least 60\%, its successful implementation would reduce the landfill disposal requirement by at least 60\%: This would eliminate at least 60\% of New York City's need for landfill cover.

Thus, the argument that 1900 TPD of compost generated in NYPIRG's "Total Recycling" program could be used for landfill cover in New York City\textsuperscript{72} is based on the faulty assumption that the city's current landfill requirement would remain unchanged under a program designed to recycle at least 60\% of the waste stream. The need for landfill cover would be reduced from 1900 TPD to 760 TPD if NYPIRG's program were fully implemented.

\textsuperscript{69} Id. at 119.
\textsuperscript{70} Id. at 151.
\textsuperscript{71} Id. at 135.
\textsuperscript{72} Id.
NYPIRG's specious argument significantly exaggerates the size of the market that would exist for recycled park waste in New York City if "Total Recycling" were implemented.

VI. Summary of NYPIRG Errors

NYPIRG purports to demonstrate that its "Total Recycling" plan is an economically feasible\textsuperscript{73} means of recycling between 60\% and 90\% of New York City's solid waste.\textsuperscript{74} My analysis reveals, however, errors in NYPIRG's plan which are summarized below.

1. The 60\% lower limit in NYPIRG's recycling plan\textsuperscript{75} is 5\% higher than justified due to the unwarranted and unacknowledged inclusion of food waste in its tabulation of park waste recycling.\textsuperscript{76}

2. The 90\% upper limit in NYPIRG's plan\textsuperscript{77} is drawn from a brief speculation that New York could reduce its waste stream beyond NYPIRG's projected lower limit for recycling:\textsuperscript{78} it is not demonstrated in a step-by-step plan as NYPIRG claims.

3. NYPIRG's plan underestimates the number of mechanical separation plants required in its plan by a factor of three (five versus fifteen), incorrectly assuming that the number of plants required is determined by the amount of useful waste to be extracted rather than by the total amount to be processed.\textsuperscript{79}

4. NYPIRG reports an invalid figure for the amount of waste paper remaining in the waste stream after source reduction\textsuperscript{80} and thus (within the framework of the faulty logic described in

\textsuperscript{73} Id. at 7.
\textsuperscript{74} Id. at 160.
\textsuperscript{75} Id. at 150.
\textsuperscript{76} Id. at 161.
\textsuperscript{77} Id. at 160.
\textsuperscript{78} Id. at 150.
\textsuperscript{79} Id. at 147.
\textsuperscript{80} Id. at 146.
number three) underestimates the number of separation plants required in its plan.

(5) In its summary of costs, NYPIRG inexplicably and without justification indicates the cost for removing 6000 TPD of organic waste to be only $29 million annually,\(^\text{81}\) although the program described in the text would cost $73 million annually.\(^\text{82}\)

(6) NYPIRG's plan underestimates the annual cost for it pilot projects by $28 per ton ($23.09 vs. $50.86)\(^\text{83}\) by underestimating the number of separation plants required.

(7) NYPIRG's plan exaggerates the size of the market that would exist for recycled park waste in New York City by incorrectly assuming that the city's current landfill requirement would remain unchanged under a program designed to recycle at least 60% of the waste stream.\(^\text{84}\)

VII. Discussion

The errors in NYPIRG's recycling plan are particularly noteworthy in two respects: 1) All the flaws in a lengthy list favor NYPIRG's plan, and 2) the plan includes the unexplained and unjustified alteration of data, one of the most serious breaches of research protocol. Never before has the unexplained and unjustified alteration of data been demonstrated in the research of an influential advocacy group, much less in research that forms the basis of legislative proposals.

NYPIRG's claim that its plan represents an economically feasible\(^\text{85}\) means of recycling between 60% and 90% of New York City's\(^\text{86}\) solid waste stream is not valid: the lower limit is inflated

\(^{81}\) Id. at 161.
\(^{82}\) Supra note 62.
\(^{83}\) HANG & ROMALEWSKI, supra note 14, at 151.
\(^{84}\) Id. at 135.
\(^{85}\) HANG & ROMALEWSKI, supra note 14, at 7.
\(^{86}\) HANG & ROMALEWSKI, supra note 14, at 160.
through the use of altered data, and the upper limit is arbitrarily chosen. Further, the group's plan uses faulty data and specious reasoning to exaggerate the existence of markets and to underestimate the costs and number of recycling plants required. A mistaken belief in the credibility of the NYPIRG plan poses risks to sound policy.

A. Harmful Legislation

Legislative proposals mandating a program with a goal of recycling 60% to 90% of New York's waste were drawn directly from NYPIRG's recycling report. Another proposal follows NYPIRG's recommendation for a five-year moratorium on building incinerators. This bill apparently reflects the premise that NYPIRG's recycling plan may obviate the need for incinerators. The adoption of laws based on NYPIRG's flawed research makes for bad public policy: delays in building modern incinerators, based on the mistaken expectation that NYPIRG's plan for recycling 60% to 90% of New York's waste is valid, may result in the extended use of older, less environmentally sound incinerators.

B. Insufficient Accountability

Despite NYPIRG's extensive record of invalid research, elected officials show faith in NYPIRG research, affording the

87 Supra note 20.
88 Supra note 21.
89 Besides the flaws in NYPIRG's recycling report described here, flaws have also been demonstrated in NYPIRG's research on automobile safety, environmental hazards, nuclear safety and standardized testing. See supra note 90; supra note 104; supra note 106; Frederick Seitz & Hans A. Bethe, A Chernobyl-Type Accident Can't Happen Here, N.Y. TIMES (letter), Jan. 10, 1987, at 26; Memorandum from Leonard Ramist & Gloria Weiss, The College Board Response to: "Rolling Loaded Dice: An Analysis of the Use of the Scholastic Aptitude Test (SAT) for Higher Education Admissions in New York State" 7 (1988).
group direct influence over environmental policy: the legislative proposals in New York that were drawn from NYPIRG's profoundly flawed recycling report illustrate this point. That sixteen U.S. Congressmen signed NYPIRG's invalid report on automobile safety and sent it to the Secretary of Transportation with a request for action\textsuperscript{90} serves as another example. Further, NYPIRG research has been used to support government-sponsored litigation: Mark Green, the New York City Commissioner of Consumer Affairs, states that NYPIRG "contributed valuable research used by our office in nine law enforcement actions against companies committing environmental fraud."\textsuperscript{91} New York State's Attorney General issued warnings to companies on the basis of NYPIRG research.\textsuperscript{92} \textit{Crain's New York Business} \textsuperscript{93} attributes to NYPIRG the power to bottle up bills in the State Assembly.

NYPIRG is also widely regarded as a legitimate research authority by nationally prominent news media: this affords the group a role in shaping public opinion and ultimately public policy. For example, NYPIRG spokesmen have appeared on \textit{Nightline},\textsuperscript{94} the network news,\textsuperscript{95} \textit{Donahue}\textsuperscript{96} and in \textit{Newsweek}.\textsuperscript{97} NYPIRG research has served as the basis for news stories by the Associated

\begin{thebibliography}{99}
\item John Tomerlin et al., \textit{NYPIRG: An Analysis}, \textit{ROAD AND TRACK} 55, (Feb. 1988).
\item New York Public Interest Research Group, \textit{Community Leaders, Faculty and Student Leaders Support NYPIRG}, \textit{HUNTER ENVOY} (Hunter College student newspaper), December 11, 1991, at 12 (advertisement).
\item Mathew L. Wald, \textit{Car-Rental Companies Warned Over Age-Based Discrimination}, \textit{N.Y. TIMES}, April 13, 1994, at B6.
\item \textit{Nightline: Garbage} (ABC television broadcast, May 1, 1987); \textit{Nightline: America's Trash Hits Home} (ABC television broadcast, July 29, 1988).
\item \textit{World News Tonight} (ABC television broadcast, May 14, 1991).
\item \textit{Donahue}, (syndicated television broadcast 1987) transcript number 05267.
\item 114 \textit{NEWSWEEK} 76 (Nov. 27, 1989).
\end{thebibliography}
On average, The New York Times features the views of NYPIRG (or its Straphangers subsidiary) once every six days.

Not unexpectedly, given its record of deficient research, NYPIRG's access to the news media results in the promulgation of misinformation. Several examples may be cited. A New York Times article provided the platform for NYPIRG to assert the feasibility of 90% recycling, the figure that is arbitrarily designated in its recycling report; The New York Times and the Associated Press reported the unjustified conclusions in NYPIRG's report on air pollution from landfills; in two full-page news articles, The Daily News reported NYPIRG's baseless link between estuarine pollution and landfills; the Washington Post reported NYPIRG's groundless conclusion regarding the cause of accidents.

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101 Peterson, supra note 24, at 46.
103 Study Cites Brooklyn Dumps, NEWSDAY, October 13, 1983 (Associated Press).
107 Supra note 99, at E1.
insufficient accountability involving the Audi 5000.\textsuperscript{108} The dissemination of NYPIRG's misleading research findings helps misguide public perception, and ultimately public policy.

That government officials and the news media regard NYPIRG as a credible source of information despite its record of deficient research demonstrates a widely unrecognized phenomenon: an insufficient level of accountability exists for the research of environmental groups. The research of these groups is regularly disseminated without being examined by independent experts. In the absence of independent checks, the quality of the research of environmental groups depends solely on the good will and competence of the group itself. As the NYPIRG case illustrates, this safeguard is inadequate.

C. A Proposed Solution

Restoring the requisite accountability for the research of environmental groups will require the cooperation of the groups themselves. Further, those that use the research of environmental groups, such as the news media and elected officials, would also have to agree to changes in the status quo. One possible means of establishing quality control for the research of environment groups would be to subject each research report issued by groups to anonymous review by independent experts (i.e., the system used in academic science).

While I believe an independent review of each study would be an effective means of quality control, I expect that the environmental groups, the news media and elected officials would be reluctant to institute such a system. The environmental groups would argue that the delays imposed by independent review would prolong the public's exposure to the risk being cited in the study. The news media are not likely to wait for a final evaluation of a

\textsuperscript{108} THOMAS A. WATHEN & HUGH M. CAFFEY, SHifting the BLAME - A REPORT ON SUDDEN ACCELERATION IN THE AUDI 5000 (1987).
study, if the preliminary results make for a "good story." Elected officials, who reflect the risk-aversion of their constituents, are likely to act on the basis of the first hint of public concern over a potential danger. Because those who must cooperate to change the current system are unlikely to tolerate the delays inherent in independent review, some means other than this must be found to establish accountability for the research of environmental groups.

A system modeled on the one used to accredit colleges is a possible means of restoring the requisite quality control for the research of advocacy groups. The quality of individual U.S. colleges is periodically reviewed by private accrediting groups with the authorization of the federal government. Colleges that fail to meet specific standards lose accreditation. A similar system of periodic review could help rate the research records of advocacy groups.

Advocacy groups could voluntarily submit their work to an accrediting panel for evaluation. I believe that accrediting panels should be drawn from the academic scientific community. (The National Research Council, an arm of the National Academy of Sciences, provides a precedent for the direct involvement of the scientific community in policy matters). Academic scientists bring advantages to the monitoring task that other groups do not. Among groups that have the technical expertise to examine the research of environmental groups (scientists from government, industry, academia, and environmental groups themselves), only academic scientists come from institutions that are not likely to have vested interests in the outcome of the evaluation. The fact that academic scientists are not likely to be affected by institutional biases lends a measure of authority to the decisions they reach. Further, academic scientists are quite familiar with the task of acting as independent referees of research: evaluating research for publication and for funding constitutes a large portion of their professional responsibilities.

The burden on the scientific community would not be inordinately large. An ad hoc committee of academic scientists
could be chosen annually by the professional scientific societies. This committee could evaluate the research of a few environmental groups each year. Given the relatively small number of nationally prominent groups to be evaluated, a succession of such annually chosen committees could complete accrediting the significant environmental groups in a few years. After completion of the evaluation of all the environmental groups, the next cycle of evaluations would begin. In this way, a fairly current evaluation of the research of each group would always be available. The news media could routinely report the accreditation status of any environmental group whose research is cited in a news story and thus easily convey to the public an independent view of the reliability of that research. This method would reward accredited environmental groups with enhanced credibility and influence. Conversely, the research of those who failed to earn accreditation would be regarded with skepticism, thereby limiting its impact on public policy.

Whether my suggestion or another is implemented, the need for heightened vigilance is demonstrated in this paper: a system that fails to detect fundamental flaws that pervade the research of an influential environmental group undermines efforts to create sound public policy.

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