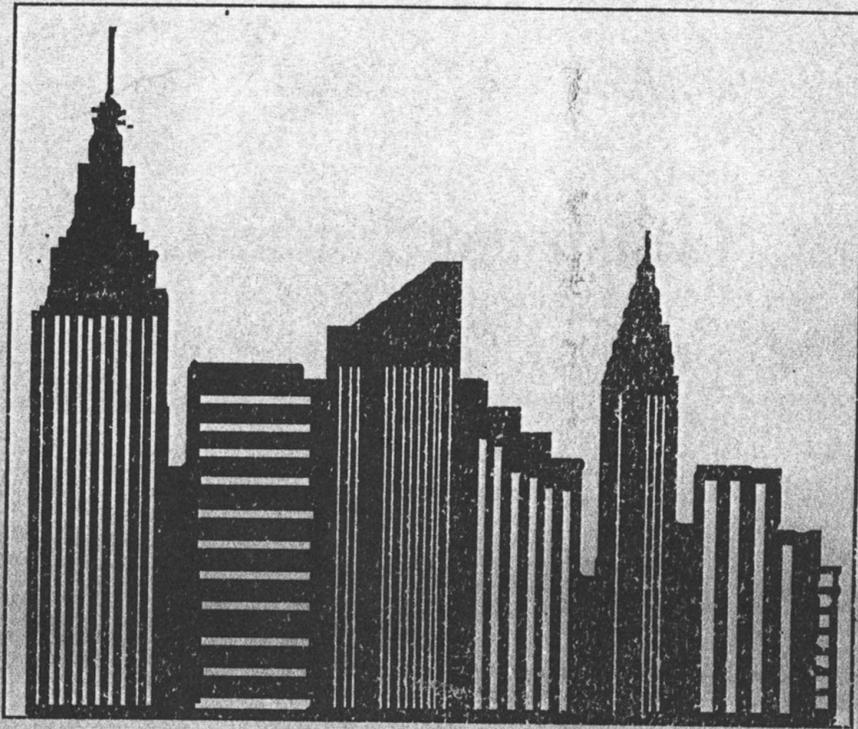


# UPSTAIRS, DOWNSTAIRS:



## PERCHLOROETHYLENE IN THE AIR IN APARTMENTS ABOVE NEW YORK CITY DRY CLEANERS

A SPECIAL REPORT FROM  
CONSUMERS UNION

WITH TECHNICAL ASSISTANCE FROM  
THE CENTER FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH  
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## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
TABLE OF CONTENTS	i
ACKNOWLEDGEMENTS	iii
SUMMARY	1
INTRODUCTION	3
PART I: TESTS FOR PERC IN THE AIR IN APARTMENTS	
STUDY METHODOLOGY	5
RESULTS	6
DISCUSSION	7
Health Implications of Perc in Apartments	7
Non-cancer health hazards	7
Potential cancer risk	9
Does Modern Equipment Prevent Perc Pollution?	10
Limitations of Our Study	11
PART II: ANALYSIS OF REGULATORY POLICY OPTIONS	
A CRITICAL REVIEW OF REGULATORY PROGRAMS	15
Federal Regulatory Programs	15
New York State Regulatory Programs	16
New York City Regulatory Programs	17
EVALUATION OF POLICY OPTIONS	21
Amending the Building Code	21
Water-Based Cleaning Processes	22

CONTENTS, Continued

<u>Section</u>	<u>Page</u>
PART II, Continued	
Advanced Perc-Based Technology With Increased Government Regulation	23
SOCIAL AND ECONOMIC IMPACTS OF CONTROLS	24
Benefits of Controls	25
Costs of Controls	25
Impacts on Dry Cleaners	25
Impacts on Consumers	28
PART III: CONCLUSIONS AND RECOMMENDATIONS	
CONCLUSIONS	31
RECOMMENDATIONS	32
FIGURES AND TABLES	35
REFERENCES	43
APPENDICES	
APPENDIX A: Laboratories That Can Test for Perc	
APPENDIX B: Useful Contacts on Perc Issues	
APPENDIX C: About the Authors	

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## SUMMARY

Tests conducted by the New York State Health Department in 1991 demonstrated that the air in apartments located above dry cleaners is polluted with perchloroethylene ("perc," for short), the primary solvent used in dry cleaning. NYSDOH has called this "a high risk environmental health problem." The state has also established 100 micrograms of perc per cubic meter of air ( $100 \mu\text{g}/\text{m}^3$ ) as a guideline for maximum safe long-term public exposure to this pollutant.

In the NYSDOH study, the highest perc levels were found in apartments above dry cleaners that had old-fashioned dry-cleaning equipment; apartments above cleaners with more modern "dry-to-dry" equipment had lower, although still rather high, perc levels. In 1994, New York State concluded a negotiated-rulemaking process which produced a proposal to require all dry cleaners located in residential buildings to use modern unvented, dry-to-dry machines. The proposal has not yet been implemented by the Pataki administration.

Our study examined whether the use of modern dry-cleaning equipment would produce acceptably low perc levels in the air of residences located above the cleaners. We selected 12 dry cleaners with modern, dry-to-dry machines, located in New York City apartment buildings, and tested the air in 29 apartments in those buildings for perc. We sampled for 24-hour periods, on four different days, in each apartment.

We found that modern equipment *does not* prevent serious perc pollution of apartments above dry cleaners. Twenty-four of the 29 apartments had average perc levels above  $100 \mu\text{g}/\text{m}^3$ , the state health guideline; eight apartments had average perc levels above  $1,000 \mu\text{g}/\text{m}^3$ . The highest average perc level in an individual apartment was  $25,086 \mu\text{g}/\text{m}^3$ . Exposure to perc at the levels we found in many apartments we tested poses a clear danger to the health of the apartments' residents.

Although perc pollution from dry cleaners in residential buildings has been recognized as a significant public-health problem for several years, to date local, state and Federal governments have failed to solve the problem. These findings suggest that the approach currently being pursued by New York State, requiring all dry cleaners to install more modern dry-cleaning equipment, will improve the situation above cleaners with older equipment, but will not guarantee acceptably low perc levels in apartments' air. We recommend that the New York City building code be amended to prohibit dry cleaners from operating in residential buildings. We also recommend that people who live in apartments upstairs from a dry cleaner get their air tested for perc.

## INTRODUCTION

Perchloroethylene, known as "perc" for short, is the solvent most dry cleaners use for normal cleaning. Perc has a variety of toxic effects, which have been documented primarily in studies of dry-cleaning workers and others exposed to perc on the job. Excessive exposure to perc damages the central nervous system<sup>1</sup>, the liver<sup>2</sup>, the kidneys<sup>3</sup>, and the reproductive system<sup>4,5</sup>. In animal studies, perc causes liver and kidney damage<sup>7,8</sup>, effects on the nervous system<sup>9</sup>, and several types of cancer<sup>6</sup>. The International Agency for Research on Cancer, an expert body, recently reclassified perc as a "probable human carcinogen"<sup>6</sup>, which means there are reliable studies of human populations exposed to perc that show elevated cancer rates.

According to the New York State Department of Health (NYS DOH), about 170,000 state residents are exposed to high perc concentrations because they either live in apartments near a dry cleaner or work in a building with a dry cleaner<sup>10</sup>. NYSDOH has established a guideline for safe long-term exposure of the general public to perc in air, based on non-cancer effects, of 100 micrograms of perc per cubic meter of air (100  $\mu\text{g}/\text{m}^3$ ). The California Air Resources Board reviewed the same evidence and has set its state guideline for public perc exposure at an even lower level, 35  $\mu\text{g}/\text{m}^3$ .<sup>12,18</sup>

NYSDOH conducted the first major study of perc levels in air in apartments above dry cleaners, in 1991. In a series of studies in the Albany and New York City areas, NYSDOH found perc levels above the 100  $\mu\text{g}/\text{m}^3$  health guideline in 39 of 40 buildings.<sup>10</sup> Their tests found extremely high perc levels, up to 197,000  $\mu\text{g}/\text{m}^3$ , in apartments above dry cleaners with old-fashioned "transfer" machines, in which clothes are shifted from a washer to a separate dryer, allowing perc vapors to escape into the air. Somewhat lower perc levels were measured in apartments above cleaners with "dry-to-dry" machinery, in which both steps occur in a single chamber<sup>10,11</sup>. There are two types of dry-to-dry machines: older, "vented" machines, which emit perc fumes into the air, and newer, "non-vented" machines that condense and recycle solvent fumes during cleaning. The NYSDOH study found much lower perc levels in apartments above modern non-vented dry-to-dry machines (6 to 1,910  $\mu\text{g}/\text{m}^3$ ) than it did above vented machines (160 to 55,000  $\mu\text{g}/\text{m}^3$ ).<sup>10,11</sup>

In a similar but more limited study, the (San Francisco) Bay Area Air Quality Management District measured perc levels

of 2 to 1,231  $\mu\text{g}/\text{m}^3$  in residential areas of buildings above five dry cleaners with non-vented dry-to-dry machines.<sup>12</sup> The potential for perc pollution of apartments exists wherever dry cleaners are located in residential buildings. However, the extent of this problem outside New York State has not yet been well documented, and no estimate of the number of apartment residents exposed to perc nationwide is available.

According to a NYSDOH survey, about 500 New York City dry cleaners--more than a fourth of the City's total--are located in residential buildings. Apartments in those buildings house an estimated 70,000 people. Of those 500 cleaners, 34 percent have old-fashioned transfer machines; 18 percent have vented dry-to-dry machines; and the remaining 48 percent have modern, non-vented dry-to-dry machines.<sup>27</sup>

During 1993-94, the New York State Departments of Health and of Environmental Conservation carried out a regulatory negotiation process involving the state government, the dry-cleaning industry, a labor union, and consumer and environmental groups, seeking a consensus solution to the problem of perc pollution in apartment buildings. Consumers Union's Consumer Policy Institute took part in those negotiations as a consumer representative. The process produced a proposal to require that cleaners operating in residential buildings use only non-vented dry-to-dry machines. As the DEC was preparing to issue the proposed rule for public comment in January this year, incoming Governor George Pataki imposed a moratorium on all new regulations; as of this writing, the rule on dry cleaners has not been formally proposed.

To explore whether requiring modern dry-cleaning machines will reduce perc pollution in apartments to acceptable levels, we measured perc in the air in apartments above cleaners that are already using modern, non-vented equipment. Part I of this report describes our test methods and results. Part II reviews government regulatory programs, examines some policy options, and looks at social and economic impacts of efforts to control perc emissions. Part III presents our conclusions and policy recommendations.

## CONCLUSIONS

Our study has confirmed and expanded on earlier work by NYSDOH, which found that perc air pollution in apartments in buildings where dry cleaners are located poses a hazard to the health of residents. NYSDOH's study found the highest perc levels above cleaners with older, outmoded equipment; ours focused on cleaners with more modern dry cleaning equipment. Our results show that, while modern technology generally does produce lower perc levels in apartments than those produced by the older machines, perc exposure in many apartments above cleaners with newer machines still exceeds the state's health guideline by a wide margin. In a 1992 letter to the EPA, the NYSDOH said, "... our data suggest that even state of the art control equipment may not adequately protect the many people living in apartments adjacent to dry cleaners."<sup>22</sup> Our study supports that hypothesis.

Our examination of federal, state and city regulatory programs that address residential exposures to perc shows that no level of government has effectively solved this problem. The U.S. EPA has accomplished very little, although federal leadership is urgently needed, both in scientific efforts to document the problem and in the search for effective regulatory solutions. New York State has developed a complex regulatory approach, but the proposal has been held up for nearly a year by the Pataki Administration, and as of this writing has not yet been formally proposed for enactment. Our study suggests, in fact, that even if it were enacted, the proposed state approach would probably not adequately protect apartment residents' health. New York City agencies have attempted to address the problem with limited staff and resources, and have had limited success. While local enforcement could be beefed up and better targeted, the continuing problems we found with perc pollution of apartments by cleaners intensively regulated by City agencies seem to indicate that perc-based cleaning is not compatible with residential buildings. Even extraordinary agency oversight does not seem likely to protect public health adequately.

In public policy debates over this issue, the interests of dry cleaners have been ably represented by two major trade associations, the Neighborhood Cleaners Association of New York and the International Fabricare Institute, the industry's national voice. The Halogenated Solvent Manufacturers Association, representing chemical companies that sell perc, is also a player. The industry organizations have focused on avoiding or mitigating adverse economic impacts on their members, which of course is their appropriate role. The industry groups also

have tended to respond aggressively to adverse publicity about perc pollution from dry cleaners. New York City's Office of the Public Advocate (Mark Green), labor unions that represent dry cleaning workers, the environmental advocacy organization Greenpeace, a few other citizens' groups, and the media have published reports<sup>21,24</sup> warning consumers about perc's hazards, and called for effective government action to protect public health. As far as we know, however, no responsible government agency has systematically sought to identify people exposed to high perc levels in apartments above dry cleaners, to inform them of the potential hazards of perc, or to determine their exposure and evaluate their health.

Based on this study, we conclude that New York State's impending proposal for a technology-based regulatory approach to prevent perc pollution in residential buildings will not do enough to solve the problem. Additional sound, effective and less costly approaches are also needed.

#### RECOMMENDATIONS

**(1) New York City should amend its building code to prohibit perc-based dry cleaning operations in residential buildings.** Such a change would bring the City's code into conformance with the State code, which, under law, it is required to be. In our judgment, this approach is the most effective and is probably the most economically efficient way to reduce perc exposure to acceptable levels. We urge that attention be paid to this policy option, and that efforts not focus only on the better-technology-and-more-regulatory-oversight model about to be proposed at the state level. Dry cleaners that operate as drop-off centers should be exempted from the ban, although air monitoring should be conducted to verify that such facilities produce safe perc levels in nearby apartments. Cleaners that employ a water-based process should also be exempt from a ban. To mitigate economic impacts, existing perc-based facilities could be given a grace period to relocate or convert to perc-free operations.

**(2) As long as perc-based dry cleaners remain in residential buildings, under any planned regulatory approach, the New York City Department of Health and the Department of Environmental Protection should use their authority more aggressively.** DOH needs to take a more proactive regulatory approach. It should inspect dry cleaners without waiting for a citizen complaint, and should test the air for perc in apartments above cleaners, using methods that detect levels near the state health guide-

line of  $100 \mu\text{g}/\text{m}^3$ . NYCDOH should also develop an inspection protocol that targets dry cleaners for periodic, unannounced visits, perhaps similar to its current inspection program for food establishments. During the same transitional period, the NYCDEP should evaluate dry cleaning operations for fugitive emissions, and should not renew permits for facilities where leaks or maintenance deficiencies create a clear potential for pollution of nearby apartments.

**(3) New York State should provide financial and technical support to the New York City agencies that must manage perc pollution problems.** Most of the State's dry cleaners located in residential buildings are in New York City. It is only fair that part of the taxes City residents pay to the state be earmarked for this City public health program.

**(4) The Pataki Administration should formally propose the negotiated rule on perc from dry cleaners, and open it up to public comment.** Our study suggests that modern dry cleaning equipment will not fully protect building residents' health. Nevertheless, the rulemaking process should go ahead, so that NYSDEC can evaluate whether additional measures are necessary to protect public health, and whether alternatives to its proposed approach may be more effective, less costly, or both.

**(5) Owners and managers of dry cleaners currently located in residential buildings should seriously consider changing to a drop-off store, converting to a water-based process, or moving to a commercial or industrial building.** These options may be less costly to the cleaners, and more effective from a public health standpoint than upgraded perc-based cleaning methods.

**(6) State and City policymakers should develop means to offer financial assistance to dry cleaners who must make changes to eliminate perc pollution.** Assistance should be available for investment in water-based cleaning processes and conversion to drop-off operations. Incentives should favor these approaches because they are more likely to achieve the goal, preventing perc pollution in apartments, than are new, low-emission perc-based cleaning systems.

**(7) Landlords of residential buildings should neither grant nor renew leases to on-premises dry cleaners using perc-based cleaning methods.** Landlords whose buildings currently have a perc-based dry cleaning operation in them should assist tenant efforts to get apartment air tested for perc, and demand that the cleaner take action if levels are above  $100 \mu\text{g}/\text{m}^3$ .

**(8) Tenants living above dry cleaners should have the air in**

**their apartments tested for perc.** To get a reasonable average estimate, we recommend that testing be done on at least three separate days. The appropriate test method is known as NYSDOH Method 311-19; a list of NYSDOH-approved laboratories that can do the testing is appended to this report. If a tenant files an odor complaint with NYSDOH, the agency will inspect the dry cleaner and test the apartment's air for perc, although tests may not be done on multiple days. To learn about inspections and enforcement actions related to the dry cleaner in their building, tenants can file a freedom of information request with NYCDOH and NYCDEP.

**(9) NYSDOH and NYCDOH should prepare educational materials and conduct outreach programs to inform residents about the public-health implications of dry cleaner emissions.** Signs or fact sheets containing this information should be required to be posted in the lobby or another central location in residential buildings that contain perc-using dry cleaners.

**(10) The U.S. EPA should aggressively address the problem of dry cleaning emissions that pollute apartments, nationwide.** EPA should determine the national extent of this problem, and follow through with its research on the economic and technical feasibility of alternative cleaning methods. EPA can also add substantial scientific weight to state and local regulatory efforts by completing its long-awaited risk assessment for perc exposure. And to abate public health hazards that are not being effectively addressed by the states and cities, EPA needs to promulgate national regulations that will eliminate this problem.