



**US Environmental Protection Agency
Office of Pesticide Programs**

**NYC Department of Health and Mental Hygiene's
Petition to EPA**

March 12, 2009



**NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE**
Thomas R. Frieden, MD, MPH
Commissioner

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March 12, 2009

Debra F. Edwards, Ph.D.
Director, Office of Pesticide Programs
United States Environmental Protection Agency
Room 12622, South Building
2777 Crystal Drive
Arlington, VA 22202

Dear Dr. Edwards:

On behalf of the NYC Department of Health and Mental Hygiene, we are writing to petition the U.S. Environmental Protection Agency to move to restrict the use of structural insecticides formulated as total release foggers, and to consider additional labeling changes to ensure public health and safety.

Such a restriction will protect the public health of all Americans. The attached report, "New York City Department of Health and Mental Hygiene's Petition to Restrict to Professional Use Only Insecticides Formulated as Total Release Foggers," details findings from our pesticide surveillance efforts that make clear why insecticidal foggers should be restricted to professional use. Key findings from our surveillance of exposures just among New York City residents related to foggers include:

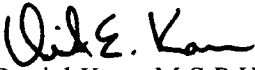
- 344 fogger exposures were reported to our Poison Control Center, between the years 2000 and 2006.
- 28.5% of these exposures resulted in moderate to severe health effects. Because poisonings are significantly underreported, we conservatively estimate that these reports represent more than 6,800 actual exposures.
- Between 45 and 71 New York City residents are treated in an emergency room every year for exposure to insecticides/fumigants in their homes, and 4-6 are hospitalized annually.
- Moderate to severe health effects from foggers are more than twice as likely to occur as from all pesticides, and seven times as likely as from rodenticides.
- Foggers are disproportionately used by low-income, minority residents, with low income Hispanics nearly four times as likely to use them than higher income Whites.
- Failure to read, understand or follow label instructions is widespread,

- Foggers are contraindicated in multi-use dwellings. More than 80% of New York City residents reside in multi-unit dwellings in which there are always other occupants, and tenants are unable to control others' reentry for the required period of time. Many urban homes are too small to tolerate even a single can of product.
- The use of foggers results in regular catastrophic events. Foggers cause between four and eight explosions each year in NYC.

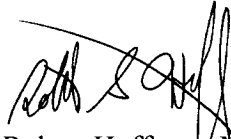
Each of these findings is described in greater detail in the attached report. The Federal Insecticide, Fungicide and Rodenticide Act requires that pesticides be used in a manner to prevent contamination of people, property and structures. The widespread availability to the public of fogging insecticides fails such a test. Restricting the use of insecticidal foggers is necessary to protect the public's health and will correct the inconsistencies and inadequacies of the current regulatory framework for these products, and will have significant immediate and long-term benefit for the health and safety of the public.

If you have any questions, please do not hesitate to contact Daniel Kass at 212-676-2080, or at dkass@health.nyc.gov.

Sincerely,



Daniel Kass, M.S.P.H.
Assistant Commissioner



Robert Hoffman, M.D.
Director, NYC Poison Control Center

cc: Commissioner Thomas R. Frieden, M.D., M.P.H., NYC DOHMH
Deputy Commissioner Jessica Leighton, Ph.D., NYC DOHMH
Bill Diamond, U.S. E.P.A.
Margie Fehrenbach, U.S. E.P.A.



New York City Department of Health and Mental Hygiene's Petition to Restrict to Professional Use Only Insecticides Formulated as Total Release Foggers

Filed March 12, 2009

Introduction

In October 2008 the New York City Department of Health and Mental Hygiene joined several state departments of health and the National Institute for Occupational Safety and Health, US Centers for Disease Control, in publishing in *Morbidity and Mortality Weekly Report* (MMWR) findings on illnesses and injuries associated with the use of total release foggers.¹ Total release foggers, sometimes called “bug bombs” are pesticide products designed to fill an area with insecticide by releasing the complete pressurized contents of cans in a widely distributed fine mist. This report expands on the MMWR report by summarizing our surveillance findings from a variety of data sources and offering a broad public health rationale for why insecticidal foggers must be restricted to professional use only.

New York City is the first municipality to conduct such a thorough review, but we have no reason to believe these issues are unique to our city or even cities in general. New York City petitions the EPA to move to restrict the use of insecticidal total release foggers, and to consider labeling changes, anticipating its benefit for the United States, overall.

Medically consequential exposures to total release foggers are frequent

Throughout this report, we reference exposure reports to the New York City Poison Control Center (NYC PCC) over the period 2000-2006. Because of a narrow case definition to enable cross-jurisdictional comparison, the total cases in the MMWR significantly understates the number of actual exposures to total release foggers in NYC. Table One, below, summarizes our findings. We found:

- 443 calls to the NYC PCC were made regarding the use of foggers;
- 344 calls, or 78%, involved known exposures to the active, synergistic and inactive ingredients in foggers;
- More than three quarters of all exposures for which the medical outcome is known result in medical outcomes with acute symptoms. Of these, 28.5% were considered by medical experts to be moderate to severe.
- Common symptoms from exposures included: coughing or choking (28.5%); throat irritation (15.1%); vomiting (16%); nausea (11.3%); vertigo or headache (7.3%); and difficulty breathing (6.3%).

¹ Wheeler K, Kass DE, Hoffman R, et al. MMWR. Illnesses and injuries related to total release foggers – eight states, 2001-2006. Oct 17; 57(41):1125-9.

Table One
Exposures to Pesticide Foggers in NYC, 2000-2006

		Number	Percent	
Total Exposures		344	100	
Place of Exposure	Home	316	91.9	
	Food Service Establishment	10	2.9	
	Other	17	5.2	
Age	0-5	42	12.2	
	6-18	45	13.1	
	19-40	182	52.9	
	41 and older	75	21.8	
	Unintentional	330	98.8	
Reason for Exposure	Intentional	1	0.3	
	Unknown	3	0.9	
	Health Care Provider	105	30.5	
Source of Report	Self	103	29.9	
	Spouse	6	1.7	
	Parent or other Relative	39	11.3	
	Other/Unknown	91	26.5	
	Healthcare Facility	119	26.9	
Caller Site	Own Residence	315	71.3	
	Male	141	41.0	
Gender	Female	193	56.1	
	Unknown	10	2.9	
	Raid	93	27.0	
Product Manufacturer	Black Jack	9	2.6	
	Cutter	3	0.9	
	Hot Shot	5	1.5	
	Real Kill	6	1.7	
	Not Specified/Other	228	66.3	
	At or En-Route to Health Care Facility	156	45.4	
How Exposure Was Managed	Home or Other Non-Health Care Facility	187	54.4	
	Unknown	1	0.3	
			Percent of known severity	
Severity of Health Outcome	No effect	60	17.4	22.7
	Minor effect	128	37.2	48.5
	Moderate effect	69	20.1	26.2
	Major effect	6	1.7	2.3
	Not followed/unknown	81	33.6	
Type of Building	Multi-Unit	93	27.1	
	Unknown	251	72.9	
Was Product Applied by a Professional?	No	338	98.3	
	Yes	3	0.9	
	Unknown	3	0.9	

Source: New York City Poison Control Center, ToxiCall Database

It is important to note that the Poison Control Center call data derives from a passive surveillance system, and all poisonings, especially those that occur in the home, are significantly under-reported. Even for the most serious poisonings resulting in fatalities, various studies suggest that fewer than 5% of medically consequential poisonings are reported to PCCs.^{2 3 4} A recent Lexis/Nexis search of press stories over the past several years of catastrophic events associated with the use of foggers (see below) in NYC found that in very few instances had a healthcare provider reported a case of exposure to the NYC PCC, despite NYC Health Code requiring such reports, even when patients had been transported by emergency medical services to hospitals. We cannot know the actual number of medically consequential poisonings that have occurred from the use of total release foggers, but a conservative estimate would suggest that the 344 reported to the NYC PCC represents more than 6,800 actual cases.

Our review of New York State emergency department utilization data found that:

- 45-71 New York City residents are treated in an emergency room every year for exposure to an insecticide/fumigant in their homes;
- 4-6 NYC residents are hospitalized annually for exposures to an insecticide/fumigant in their home;
- hospital stays ranged from 1-41 days, with one quarter of all cases requiring stays exceeding 5 days; and
- the average cost of hospitalizations due to the use of insecticides and fumigants was \$17,754.⁵

Exposures to insecticidal foggers are more likely to result in adverse health outcomes than exposures to other pesticide products

One way to evaluate the severity of exposures to foggers is to compare the medical outcomes associated with their exposures to those from other pesticides. Figure 1, below summarizes our findings from pesticide exposure reports to the NYC PCC from 2000-2006.

- Health effects are more than twice as likely to occur from exposures to foggers as from all pesticides
- Health effects are more than six times as likely from exposures to rodenticides.
- Moderate or major effects were more than twice as likely to occur from fogger exposures as from all pesticides, and seven times as likely as from rodenticides.

In May of 2008, the US EPA announced that it would restrict the sale of ten active ingredients in rodenticides, even though “only a small number of exposed children experience medical symptoms or suffer adverse health effects as a result of their exposure...” because, “the number of exposure incidents is unacceptably high. [And], data indicate that children in low

2 Blanc PD, Kearney TE, Olson KR. Underreporting of fatal cases to a regional poison control center. *West J Med.* 1995 June; 162(6):505-509.

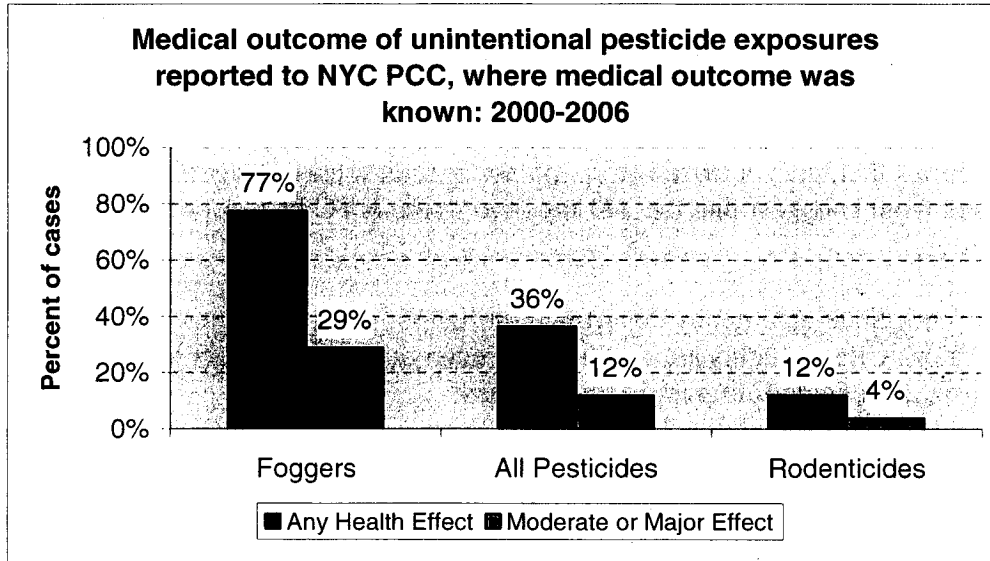
3 Hoppe-Roberts JM, Lloyd LM, Chyka PA. Poisoning mortality in the United States: comparison of national mortality statistics and poison control center reports. *Ann Emerg Med.* 2000;35(5):440-8.

4 Mittman N, Knowles SR, Gomez M, et al. Evaluation of the extent of under-reporting of serious adverse drug reactions: the case of toxic epidermal necrolysis. *Drug Saf.* 2004;27(7):477-87.

5 Statewide Planning and Research Cooperative System (SPARCS).

income families are disproportionately exposed.”⁶ The number of exposure events of medical consequence related to the use of insectidal total release foggers far exceeds in severity, and number, those of rodenticides.

Figure 1



Foggers are disproportionately used by low-income, minority residents

Just as is the case with rodenticides, as cited by US EPA in its risk mitigation decision, foggers are disproportionately used by low-income, minority residents. In New York City, 30% of households have cockroaches. But the disparity between higher and low-income families is profound. Pest populations are more prevalent in the homes of lower income families, and among minority populations after controlling for income.⁷ Low income Hispanic households are five times as likely to have cockroaches as higher income Whites (58% versus 12%).

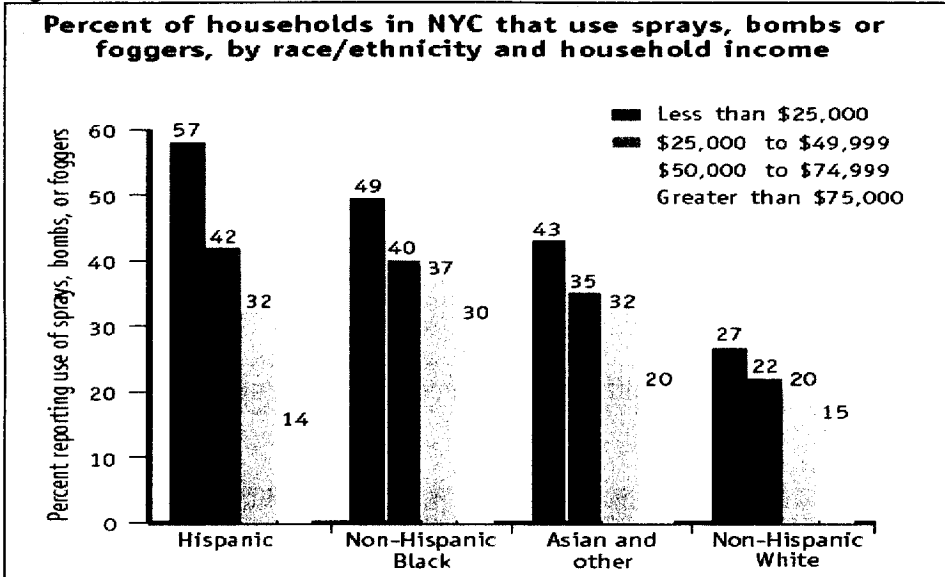
These families are also far more likely to turn to the use of pesticides to help control pests. Figure 2 below illustrates the disparities in the use of sprays/bombs/foggers by race and income. Once again, low income Hispanics are nearly four times as likely to use aerosol pesticide products, including foggers, as higher income Whites. Foggers are not used to supplement professional pest control; rather they substitute for it. Neighborhoods with the highest proportion of homes that use fogging products have the lowest odds of having their buildings visited by a licensed pest control applicator.⁸

⁶ US EPA. May 28, 2008. Final Risk Mitigation Decision for Ten Rodenticides. Accessed at: <http://www.epa.gov/pesticides/reregistration/rodenticides/finalriskdecision.htm>.

⁷ Kass D, McKelvey W, Van Wye G, et al. Pests Can Be Controlled ... Safely. NYC Vital Signs 2005, 4(3): 1-4. Available at <http://www.nyc.gov/html/doh/downloads/pdf/survey/survey-2005pest.pdf>.

⁸ Unpublished analysis of US Census data from the New York City Housing and Vacancy Survey, 2005.

Figure 2



Misuse, inappropriate use, and off-label uses of total release foggers are widespread

We are aware that registrants of total release foggers claim that foggers are safe when used according to label, however the evidence suggests that labels are often unread, misinterpreted, and even when read, direct people to use products in ways that result in overuse.

More than 90% of all exposures to total release foggers occurred in the home of the exposed person. Professional applications were responsible for just 3 of 344 cases, less than 1%. At least 93 of the 344 cases occurred in multi-unit dwellings where a single release may expose many other residents. Information was not available in the remainder of the cases to determine the type of building.

A detailed review of case narratives was conducted to understand what contributed to the exposures. Failure to understand or observe label guidance was implicated in 137 (37%) of the exposures during this period. Of those with known label issues, the most common were:

- failure to vacate (36.4%);
- the product was used as an aerosol rather than a TRF (16.4%);
- early reentry (16.3%);
- handled by a child (10.7%); and
- overuse of product (8.5%).

Education and outreach alone is ineffective at mitigating the risks from foggers

New York City has conducted extensive public outreach on safer pest control. More than 150,000 copies of our guide, "How to Control Pests Safely: Getting Rid of Roaches and Mice," have been distributed in English and Spanish.⁹ The guide was adopted by EPA and the National Center for Healthy Housing as a model guide.¹⁰ EPA began its campaign to encourage consumers to read pesticide product in 1996. Despite widespread public education, the use of and exposure to foggers persists. Education alone will not adequately reduce the dangers of these products.

Despite wide availability for urban dwellings, foggers are contraindicated for many urban apartments

The US EPA's decision to permit the general use of a given pesticide product should be premised on the assumption that consumers will be able to understand and adhere to label cautions, instructions and precautions. In the case of total release foggers, this logic is deeply flawed for a variety of reasons:

- Fogging product labels universally state that the products may not be release in the presence of occupants. More than 80% of New York City residents reside in multi-unit dwellings in which there are always other occupants. Consumers have no professional or legal obligation to notify other tenants.
- Foggers typically require 2-8 hours of clearance before reentry. Many tenants share spaces and may not be able to control who enters a given unit, or a building's common spaces during that time.
- Fogging labels are far more difficult to understand and observe than typical general use pesticide labels. Typical language includes "Use no more than one ounce per 1,000 cubic feet of space." We assume that registrants meant for this warning to be used to calculate the total number of cans that may be used at a time in a given space. But adhering to such a warning requires understanding volume, and the performance of multiple calculations to arrive at the number of cans; that is, having knowledge of a space's area in square feet and ceiling height, multiplying those values, dividing the total by 1,000, and rounding down (one hopes) to the nearest integer.
- Admonitions to use one just can per 1,000 square feet are meaningless in densely populated urban areas. An 800 square foot apartment with 7 foot ceilings, typical in some neighborhoods and larger than many in others, could tolerate just 5.6 ounces, less than the contents of most single cans.
- Labels warn users to extinguish all ignition sources. Explosion cases may occur because of non-obvious ignition sources: refrigerator thermostats, pilot lights and

9 How to control pests safety: getting rid of roaches and mice. NYC DOHMH. Available at: <http://www.nyc.gov/html/doh/downloads/pdf/pest/pest-bro-healthy-home.pdf>.

10 See, <http://www.epa.gov/pesticides/controlling/resources.htm>; <http://www.healthyhomestraining.org/ipm/>

others. More than two thirds of NYC residents rent their homes, and have little or no experience purchasing or maintaining appliances, and are least likely to know each and every ignition source.

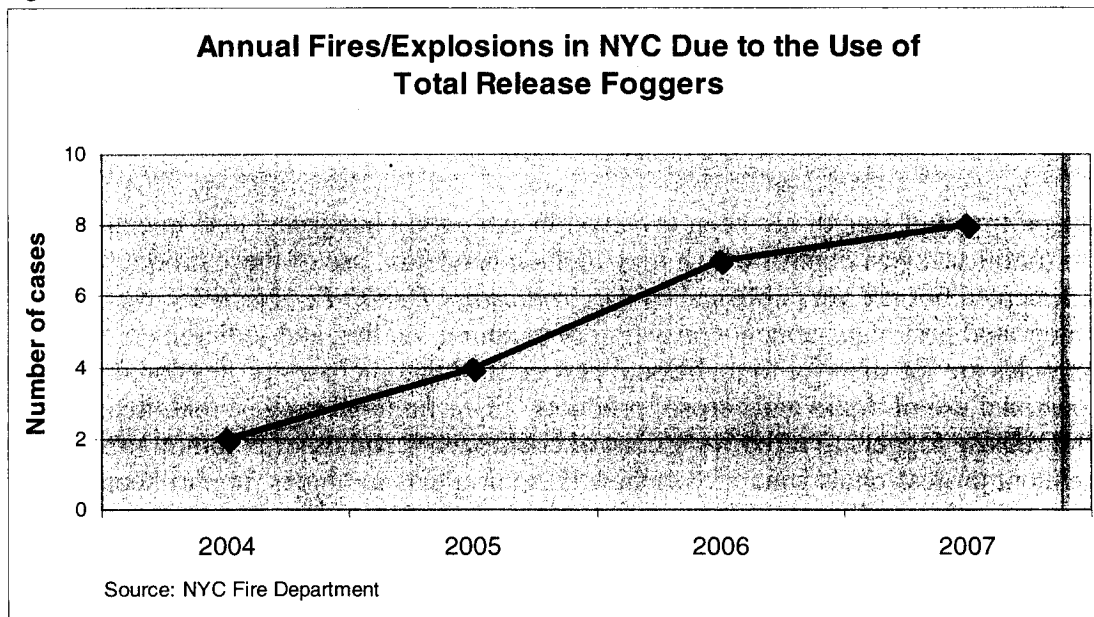
- Fogging products are frequently sold by the case (2 to 12 cans), implying the safety of frequent use or the need to use more than one can at a time.

The use of foggers results in regular catastrophic events

According to the New York City Fire Department, foggers cause between four and eight explosions each year that result in full fire investigations. In 2007, the last year for which complete data are available, four times as many incidents occurred as in 2004. See Figure 3, below.

Explosions and fires occur when the propellant in foggers reaches an atmospheric level at or above lower explosive limit and comes into contact with an ignition source. Some obvious ignition sources include stove, hot water heater and boiler pilot lights. But modern apartment life brings with it a variety of potential ignition sources that were not likely contemplated when products were first introduced to market. These sources can include doorbells, lights, telephones and appliances that cycle on and off, such as refrigerators, clothes dryers and other appliances that have no obvious flame to extinguish, as labels typically advise.

Figure 3



It is fortunate that no deaths from fogger use have occurred in NYC in recent years, but these events are serious nonetheless. In August 2007, a roach bomb exploded in a 56 unit apartment building, leaving the building without gas for nearly a month. Another recent incident in NYC occurred on September 27, 2008 in a 6-story, 24 unit apartment building in East Harlem. The event involved 911 dispatches of multiple ambulances, with 10 people treated on scene, of

whom six were transported to an area hospital and 3 refused transport. Notably, despite local Health Code mandate for pesticide poisoning reporting by medical provider, neither incident was reported to the New York City Department of Health until such a report was requested.

There are contradictions in the restrictions of commercial and personal fogger applications

Most total release foggers registered for sale in NYS are prohibited from use in food service establishments. But the current general use status of most foggers enables their use in hundreds of thousands of residential kitchens, where food is even less likely to be fully protected.

Here in New York State, unlicensed individuals may apply general use pesticides only in their own dwelling units. Applications in multi-unit dwellings and shared commercial spaces must be made by licensed pesticide applicators. An owner of a multi-unit dwelling in New York City may not even apply containerized rodent or cockroach bait in common areas of the building without employing a licensed applicator because of the albeit small risk of potential inadvertent exposure of building occupants. These rules may differ across states, but those inconsistencies only serve to highlight the need for federal action to reconcile the contradictions within, and between states.

The health risks associated with the use of foggers are not justified given their likely poor efficacy

Because products formulated as total release foggers are not generally applied for public health or antimicrobial purposes, there is no affirmative requirement that their manufacturers submit efficacy data to support claims made as part of their products' registration, on their products' labels or in their advertisements. Even if such data were provided, we would find such data suspect absent some objective effort to evaluate its validity.

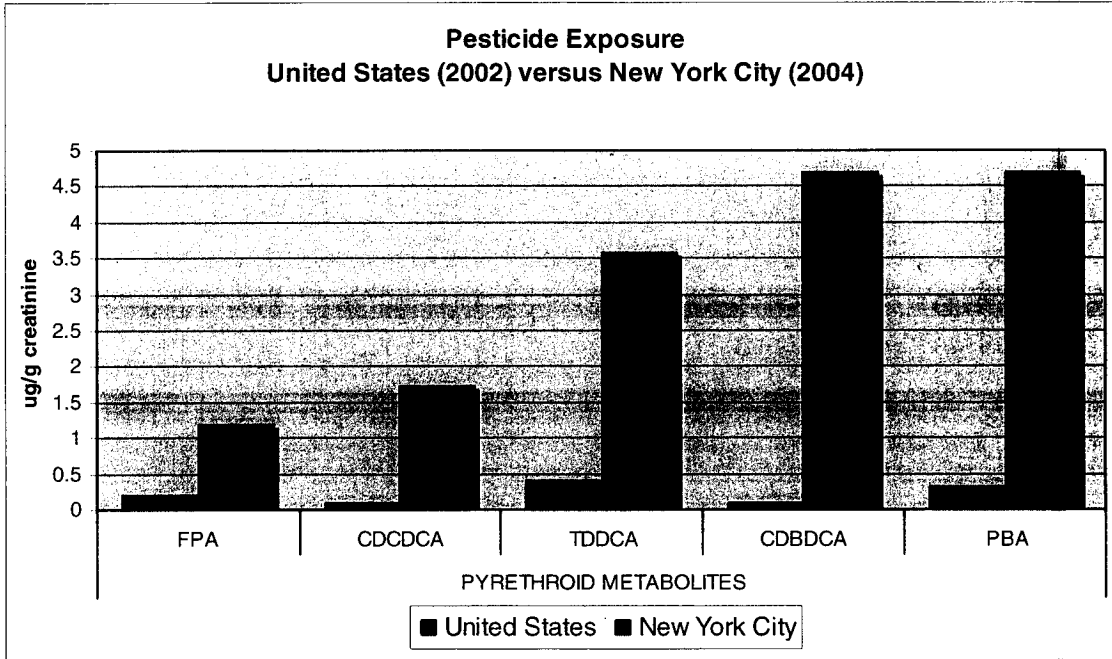
The NYC Department of Health has been involved in evaluating integrated pest management compared to traditional pest control which may include residents' use of these products. In a manuscript accepted but not yet published by *Environmental Health Perspectives*, we found that basic integrated pest management consisting of cleaning, sealing and judicious use of bait-based insecticides are far superior to traditional pest control that includes professional and continued personal use of liquid and aerosol products.¹¹ Our findings suggest that there is no need for total release foggers to effectively control cockroaches and other common urban pests. Pest management professionals generally eschew these products in homes, in part because the indiscriminate deposition of insecticide renders useless other efforts, including baits and gels for which good efficacy data is available. The removal of these products from general use will leave residents with a substantial number of choices of products and methods with proven efficacy.

11 Kass DE, McKelvey W, Carlton E, et al. Effectiveness of an integrated pest management program in controlling cockroaches, mice and allergens in NYC public housing. *Env Health Persp.* (in review).

EPA should act to reduce the burden of pesticide exposures in urban areas

DOHMH's 2004 NYC Health and Nutrition Examination Survey tested a representative sample of NYC's population for metabolites of pyrethroid exposure. We found that NYC residents' exposures to pesticides is substantially greater than that of the nation as a whole, with exposures to pyrethrins/ pyrethroids – the most common class of active ingredients in foggers - - about ten times that of US residents overall. Figure 4 below illustrates that for every pyrethroid metabolite tested, NYC exposure dwarfs that of the US.

Figure 4



The widespread use of fogging products surely contributes to this disproportionate exposure, and may be true in urban areas with persistent structural pest problems across the U.S. Chronic exposure to these pesticides has been associated with a variety of birth outcomes, including reduced birth weight and size and comparatively lower measures of cognitive outcomes in early childhood.

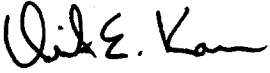
Conclusion

We request that EPA make responsible public policy that will end the current indiscriminate and unnecessary use of products that pose unacceptable risks to the public's health and safety. Restricting their use to licensed pesticide applicators will narrow their use by ensuring they are applied only by personnel trained to understand and follow the restrictions and cautions on product labels and will result in better targeting their use to species far less prevalent than cockroaches such as fleas against which the products are likely effective. It will remove from consumer choice products that should never be the first line of defense against pests, but from all indications are. And, restricting their use will protect the many occupants of multi-unit dwellings who face exposure from choices made by others, and unsafe practices they

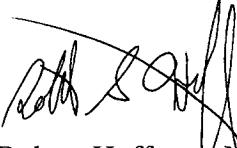
themselves cannot supervise or be made aware of. There are safer and more effective products available for the control of pests, and restricting the sale of foggers will still leave many options available to the public.

In short, EPA's restriction of the use of foggers will realize significant, and measurable, short- and long-term health and safety benefits.

Respectfully submitted,



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Assistant Commissioner
Bureau of Environmental Surveillance and Policy



Robert Hoffman, M.D.
Director, NYC Poison Control Center