

**Attachment 2**

**Agenda: Croton Facility Monitoring Committee Meeting**

Thursday, September 15, 2005 – 6:00 PM – 8:00 PM

Location Arranged by Community Board #8

in association with Ed Yaker, President, Amalgamated Houses

*Vladech Hall, Amalgamated Houses - 74 Van Cortlandt Park South (intersection of Hillman Avenue) Bronx NY 10463. Enter on Hillman Avenue - Contact: Education Dept. (718) 796-9300*

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| <b>I. Welcome</b>  | Anthony Cassino, Chair CB#8<br>6:00 PM - 6:05 PM                                       |
| <b>II. Comments from the Public</b>  | Signup & Speak—3 min max.<br>6:10 PM - 6:40 PM   |
| <b>III. LL 77/2003 &amp; Air Quality Programs</b>                            | Gerry Kelpin - DEP<br>6:40 PM – 6:50 PM  |
| <b>IV. On-Road Vehicles Emissions Reductions</b>                             | Ass't. Comm. Angela Licata - DEP<br>Glenn Goldstein, Emisstar<br>6:50 PM – 7:15 PM     |
| <b>V. Construction and 3 Month Look Ahead Schedule</b>                       | Bernard Daly - DEP<br>7:15 PM – 7:30 PM  |
| <b>VI. NYC Dept of Health &amp; Mental Hygiene Construction &amp; Asthma</b> | Daniel Kass, Deputy Director,<br>Environmental. Epidemiology, DOH<br>7:30 PM – 7:45 PM |
| <b><u>VII. CFMC INPUT, QUESTIONS, COMMENTS</u></b>                           | 7:45 PM – 8:00 PM  |
| CFMC Discussion  |  |
| <b>VIII. Adjourn</b>   | Anthony Cassino<br>8:00 PM   |

**NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF ENGINEERING DESIGN AND CONSTRUCTION  
CROTON FACILITY MONITORING COMMITTEE MEETING SUMMARY**

THURSDAY, SEPTEMBER 15, 2005 – 6:00PM

The September 2005 meeting of the Croton Facility Monitoring Committee pursuant to City Council Resolution 933/1999 was held on September 15th at the Amalgamated Houses' Vladeck Hall, 74 Van Cortlandt Park South, Bronx NY 10463. The names of the CFMC representatives and alternates, staff from DEP and its consultants, and visitors are attached. (Because not all individuals signed in; the attendance list is not complete.) (*Attachment 1*)

The meeting commenced at approximately 6:15PM; an agenda (*Attachment 2*), which had been circulated to the CFMC, was available.

Welcome

Anthony Perez Cassino, Chair of Community Board #8, opened the meeting. He said that it was CB 8's pleasure to host the CFMC. He thanked Ed Yaker, President of Amalgamated Houses, for making the space available. Mr. Cassino explained the format: three minutes for each speaker during the meeting's first thirty minutes. Thereafter, participation is limited to presentations and CFMC discussion.

Public Comments

Mr. Cassino called on the following persons for comments or questions:

Lowell Green, College Gardens Co-Op – Reiterated comments she made at previous meetings that the site falls within boundaries of several police precincts. She said that the DEP Police Chief was to speak at a prior meeting but had to cancel, and she requested that he address the CFMC as soon as possible on site security.

Kevin Johns, a resident of Amalgamated Houses, who works on site as a member of Local 15, IUOE, said the project is proceeding with good environmental practices, such as continuous dust control and use of ultra low sulfur diesel (ULSD).

Ed Yaker, President, Amalgamated Houses, asked for information about the fence, landscaping and schedule for repairs at Jerome Park reservoir. He invited the CFMC to return to Vladeck Hall when the weather cools, since the room isn't air conditioned.

Victor Scelzo, a local resident, made brief comments about the project.

Clarissa Pringle and Irvin Peel who live on West Gun Hill Rd. and Gates Pl., respectively, spoke about the project's blasting and vibrations.

Denique (no last name provided), who attends DeWitt Clinton HS, spoke briefly about the project's impact on air quality and blast vibrations.

Frank Schonfeld, local resident, said the location of the project is “not a done deal” and various politicians have alerted experts to review the project.

Carl Lundgren, member of Bronx Green Party, spoke of death rate increase anticipated as a result of the project’s being built in a poor neighborhood, and complained about trucks not adhering to approved truck routes.

Dr. Anthony Gronowicz, Green Party mayoral candidate, spoke about scientific reports, in particular one from Queens College, and impacts on public health from large projects.

Jeffrey Dinowitz, Assembly Member, asked for information about the number of Bronx residents employed on the site, and noted the number of out-of-state license plates on trucks hauling dirt and rock off site. He requested information about where the subcontractors are located.

Fay Muir, Clean Water for the Bronx, asked for the schedule for Jerome Park reservoir repairs, and recommended that membrane filtration be used at Croton.

Mr. Cassino closed the public portion of the meeting, and asked Gerry Kelpin to provide an update on air quality.

#### Air Monitoring/Air Quality

Ms. Kelpin explained that the purpose of Local Law 77/2003 is to minimize air pollution during construction. It requires that emissions from off-road equipment be controlled as far as technologically practicable on construction sites. What is covered by LL 77 is on-site equipment, not trucks transporting material to and from the site. LL 77 applies to City government projects and private projects that are funded by the City. Although not legally required to do so, DEP agreed to follow the requirements of LL 77 on the Croton Filter Project before it became mandatory for other city construction projects.

For off-site air monitoring, DEP determined where the air monitors will be installed. She distributed to the CFMC a map that shows the locations of the air monitors and a narrative about the program (*Attachment 3*). Ms. Kelpin explained that the program will monitor impacts from equipment on the site, but that is made difficult by truck traffic that regularly travels in the community. Ms. Kelpin said there will be seven air monitors for on-road emissions that will measure 2.5 microns particle emissions. She said that there will be two 24 hour monitors – one on the roof of IS 308 on Bainbridge Ave, as well as portable monitors at five locations (two locations will have duplicate monitors). They will be placed along Jerome Ave. Data will be reviewed and analyzed.

Members of the CFMC asked how long it will take before the air monitoring system is in place and data are available for CFMC review. Ms. Kelpin said that the PM 2.5 monitors have been received and are being calibrated. Other equipment, including meteorological equipment, is expected to be delivered to DEP by the end of September and then must be installed at or near the site, and must have power. Where it is on public space the

equipment must be protected from vandalism or theft. Mr. Cassino asked how long it will take before DEP has base line data. Ms. Kelpin said the data will be reviewed on a weekly basis and that about 2 weeks of data collection is needed to calibrate the system. Monitors are expected to be running by the end of October.

Ms. Kelpin then introduced Glenn Goldstein of Emisstar LLC to present information on progress towards complying with LL 77, and then to talk about the request to retrofit on-road trucks with emissions reduction technology. Mr. Goldstein said that Emisstar and DEP have had several meetings regarding best available technology (BAT) for on-site equipment. On September 21, there will be responses from vendors who want to supply the BAT. Two pieces of equipment, a hydraulic drill rig (which arrived with a Diesel Occidation Catalyst (DOC) and CAT 966 Loader (BAT retrofit was purchased and installed) are already providing reduced emissions.

Mr. Goldstein discussed the cooperative and contractual relationship between Emisstar and DEP. Then he asked Tod Wickersham and Michael Block of Emisstar to make the presentation for off site (on-road) retrofits that will serve as the basis of Emisstar's on-road emissions reduction recommendations. The presentation was recently presented to DEP Commissioner Emily Lloyd by Emisstar and DEP staff. (*Attachment 4*) Emisstar's recommendation is the use of DOCs and closed crank case ventilation filters for the on-road truck fleet. With the use of ULSD these retrofits will reduce PM emissions by 30%.

Lee Llambelis of the Bronx Borough President's office and Gregory Faulkner of Community Board 7 asked Emisstar for clarification about BAT and LL 39/2005 requirements. Ms. Kelpin and Bernard Daly responded that newly enacted LL 39/2005 addresses emissions reductions for on-road municipal fleets after 2007 but does not include trucking fleets used by contractors. Lyn Pyle, CB 7, questioned the lack of USEPA requirements for BAT for on-road vehicles. Ms. Kelpin responded that manufacturers must build improvements into future vehicle models and, once the technology is available, the regulators can require it.

Mr. Wickersham emphasized that Emisstar sought real world solutions and recommended to DEP ways to get maximum reductions that truckers could safely install. He said that DEP never asked Emisstar to recommend the cheapest solutions.

Ms. Pyle spoke about combining technologies to achieve greater emissions reductions. There was general discussion between Emisstar and Ms. Pyle about the technology. After further CFMC discussion, Angela Licata, Assistant DEP Commissioner for the Office of Environmental Planning and Assessment, said that Commissioner Lloyd and DEP staff are looking closely at Emisstar's recommendations for on-road trucks and are meeting with one of the leading environmental organizations, Environmental Defense, to discuss the recommendations. DEP is aware of and will consider the comments from CFMC representatives. The department is looking at whether additional incentives would lead to greater participation among the trucking community. If feasible, DEP will achieve emissions reductions for on-road vehicles in the current Croton contract. If not feasible, future Croton contracts will be bid with a requirement for on-road vehicles to

have specified emissions controls. Ms. Licata said that Commissioner Lloyd is monitoring the activities related to this issue, and she reiterated that DEP committed to the use of ULSD and off-road equipment BAT before the law required it to do so.

Mr. Cassino said that DEP should do its best to increase the current emissions controls at the Croton Filter Project site. Ms. Pyle said she appreciates Commissioner Lloyd's involvement and the work that has been done. Nevertheless, she said, another opinion is needed to verify Emisstar's recommendations for the trucks, and she said she would contact other experts to review Emisstar's findings.

#### Bernard Daly's Construction Update

Mr. Daly said that the majority of soil has been excavated and taken off site. Some of the soil has been used by the Parks Dept. at other locations and on the Mosholu golf course. He said that the 6AM start time for loading trucks has been successful, getting the first group of trucks off site before the 7AM rush hour. Early start of trucking began on August 22<sup>nd</sup>. Mr. Daly said the ornamental wall will be constructed this year – granite pieces are in preparation, piping and other features are being installed and its waterfall will commence operations next year. No decision has been made about whether to retain the ornamental wall after construction is completed at the water treatment plant.

Blasting, rock crushing and loading of rock are continuing activities; wood lagging is being installed; temporary club house adjacent to Shandler is being constructed; demolition of the old club house will take place during the next three months; electrical equipment is being installed; and maintenance building is being constructed at the golf course. It is expected that the golf course will back to full operation next season. As far as ancillary activities, Mr. Daly said that Dept. of Health staff began distributing garbage cans in the community during the third week of September.

#### Dept of Health and Mental Hygiene (DOHMH) Presentation about Asthma (Attachment 5)

Daniel Kass, Deputy Director, Environmental Epidemiology, explained that the rate of asthma on average for the Bronx is higher than for NYC overall. City-wide, the number of cases has decreased in children up to 14 years old between 1997 and 2003, the last year for which data are available. Mr. Kass described a 13% reduction in those 15 – 34 years of age, but noted that there was a modest increase in the rate for those 35 years of age and older. DOHMH believes that the 15 – 34 age decrease may be due in part to improved clinical care of asthmatics, and improved emergency room procedures that keep children from being admitted to the hospital. It is unlikely to be related to improved ambient air quality, as that has remained relatively stable in New York City over this period of time. Nonetheless, there is a clear association between higher ambient air pollution and asthma, and poor air quality in New York City does account for some of the symptoms of asthma. In addition, there is a clear relationship between heart disease and overall mortality and air quality, though small increases in overall air pollution have very small effects on those outcomes.

Mr. Kass further explained that the Croton FEIS set forth the worst case scenario that could result in increased mortality. He said that the slight increase in mortality associated with the worst-case scenario increments in airborne particulate matter was based on population studies, and cannot be interpreted to apply to the community. Specifically, he noted that the increased risk in mortality mentioned in the FEIS occurs only when the increment in air pollution occurs, and only to the population that experiences it. The FEIS used a worst case scenario of the air impact at a particular location, under a unique set of worst-case circumstances adjacent to the construction site where no one effectively lives. The actual exposure for people who live around the site would be much less, as would any risk of illness.

On a City-wide basis DOHMH would like to see improvements in PM 2.5 ambient levels. Mr. Kass acknowledged that some people have asked for a health study that compares hospital emergency room visits, admissions and symptoms to construction activities at this site, as well as other efforts around the City. However, Mr. Kass noted that because of the small populations exposed, the relatively small number of events over short periods, the very confined geographic area of construction impacts and the seasonal variation inherent in asthma, it is exceedingly difficult to do these studies, and they will almost surely show no effect.

Instead, Mr. Kass said, good work rules and reducing emissions are ways to improve air quality. He said he was pleased to hear about DEP's air monitoring program, and he thought it would be effective because it will provide data that can result in corrective action by the contractor if needed.

As an aside Mr. Kass said that DOHMH studied the Fordham/Bronx Park area's pest problems. Studies demonstrate that the presence of mice and cockroaches are very strongly associated with worse symptoms of asthma. He noted that the communities of the Bronx surrounding the construction site have some of the highest rates of rodent infestation in homes and cockroach infestations in homes in the city. In addition, residents are using aerosol pesticide products and unsafe and illegal pesticides to control them. Both the infestations and the response can worsen health problems. DOHMH would be happy to speak to community organizations in the future about what can be done to address some of these problems.

Comments about air quality were exchanged among Ms. Pyle, Ms. Licata and Mr. Kass. Ms. Pyle said that the decision to retrofit on-road trucks is a political one. Ms. Licata said that the decision will rely on technical, not political, considerations.

#### CFMC Discussion

A time, place and day will be set for the next meeting. Martha Holstein will circulate a recommendation by email to the CFMC. **Note:** Next meeting will be on Thursday, October 20 at 4:30 PM in DEP's Community Office at 3660 Jerome Avenue, Bronx.

Mr. Cassino adjourned the CFMC meeting at approximately 8:15 PM.

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## CROTON FILTRATION PLANT AIR MONITORING SYSTEM UPDATE

The Croton Filtration Plant Air Monitoring System (CFP) is comprised of two systems working in conjunction to help qualify the air quality data in and around the construction site.

## ON-SITE:

The in-situ or onsite system will consist of four sites located in a parallel configuration that surrounds the active excavation site. Each of the sampling locations has manual type high volume air sampling instruments used to gather samples for Total Suspended Particulate matter (TSP) and Particulate Matter that is less than or equal to 10 microns (PM-10).

The system also has a "floating" fifth set of monitors, which will be used for quality assurance (QA) purposes. On a rotating basis these monitors will be run as co-located samplers to determine the percent difference between the permanent monitors and the QA samplers to make certain that the readings lie within a strict band of control limits. This additional QA will help better statistically validate the database that will be generated from the samplers.

In addition to these monitors there is a single automated particulate monitor located near the site exit, which records particulate data on a 24/7 basis. This sampler is reconfigured on a weekly basis to record TSP and the following week to record PM10. This sampler which although is not designated as being a reference type instrument like the above manual instruments, will still help DEP in better understanding the on-site activity occurring both during and after the construction activity.

Finally, a meteorological station will also be constructed on site to gather necessary weather parameters to help in the analysis of the data and in the generation of wind roses that will be used for further data analysis by DEP.

## OFF-SITE:

The off-site system is specifically designed to measure for Particulate Matter less than or equal to 2.5 microns (PM2.5). PM 2.5 is commonly referred to as respirable particulate matter. This system will consist of both manually operated instrumentation and automated computerized instrumentation to generate the database.

The manual system will consist of (12) battery operated samplers that will be mounted on light poles at levels normally described as breathing level heights. The sites that have been initially selected are as follows:

- The intersection of Jerome Ave. & Bainbridge Ave. Four samplers will be mounted on the light pole in an X configuration. (2) will run on an every other

day basis, because of the filter and battery switch out requirements, and (4) will run on an every sixth day basis for quality assurance. Of the two samplers that will be running on an every other day basis; (1) will run only during construction activity hours and the other (1) will run for 24 hours. This separation of sample time will help DEP develop an understanding of the contribution the on-site activity makes to the background air quality data.

-The intersection of Bainbridge Ave & 213 St (2) monitors will be mounted on this light pole in an opposite configuration. The monitors will run on an every other day basis (1) of the monitors will run only during construction activity hours and the other (1) will run for 24 hours as above

-On Jerome Ave midway between the site exit and 233<sup>rd</sup> St near the golf course entrance (2) monitors will be mounted on each of (2) light poles located across Jerome Ave. to help better gather data due to the traffic impact on this main traffic artery. As above, the monitors will run on an every other day basis (1) of the monitors will run only during construction activity hours and the other (1) will run for 24 hours as above

-On Jerome Ave near the DEP site office (2) monitors will be mounted on a light pole in an opposite configuration. The monitors will run on an every other day basis (1) of the monitors will run only during construction activity hours and the other (1) will run for 24 hours as above. Unlike the other saturation samplers, this set of monitors is considered to be "special" because the data gathered by these units may help better qualify the potential dispersive effect the overhead subway line is making on the localized air quality.

In order to compliment the (12) saturation samplers and maintain coverage for the remaining days the saturation samplers do not cover, (2) automated samplers will be installed to gather data on a 24/7 basis. The data from these samplers will periodically be downloaded into laptops and incorporated into the overall database.

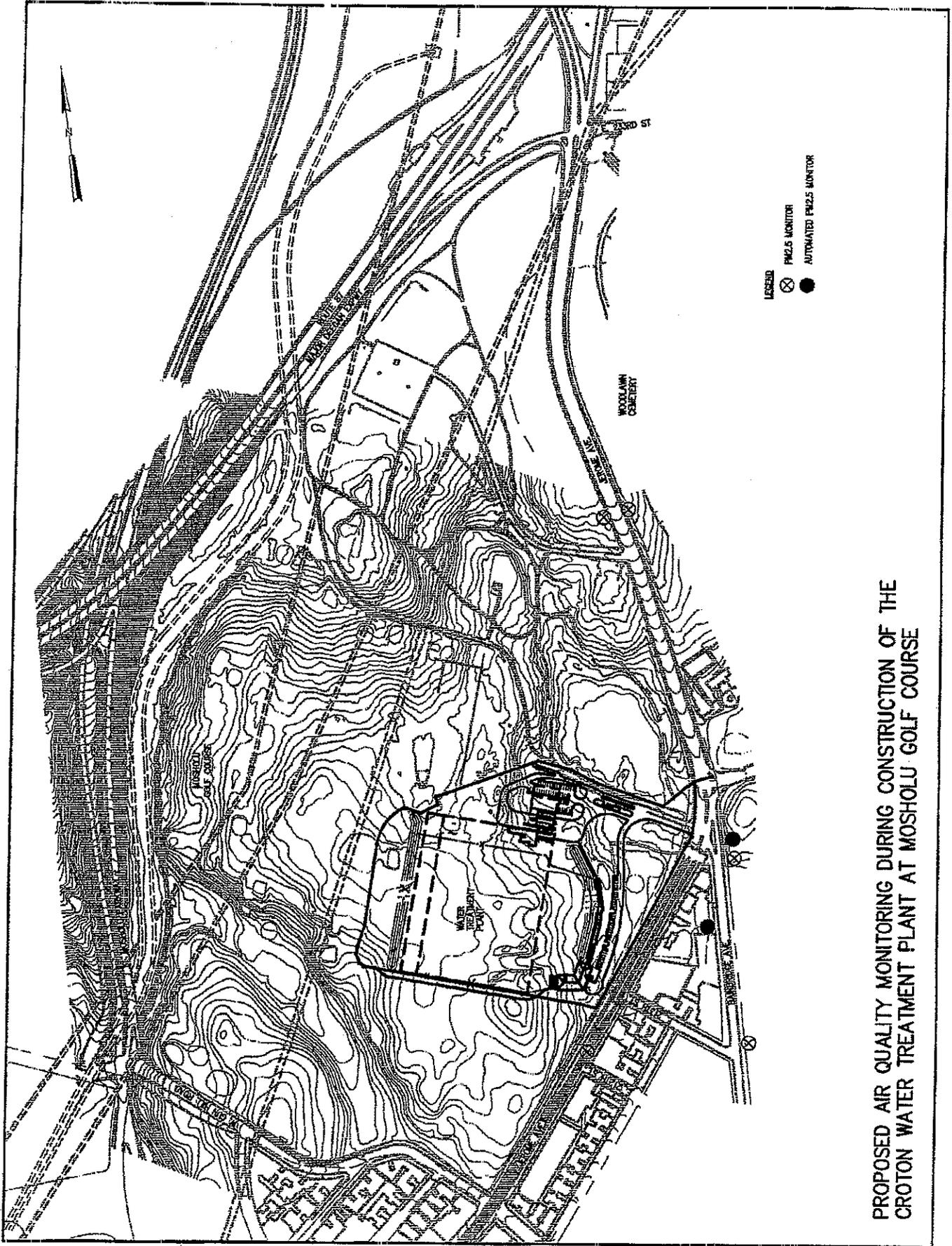
The two sites selected for location of the monitors are:

-IS 308 roof top monitor. This site is located within the community and in a location that is representative of the residential buildings nearby.

-Street Level on the corner of Jerome Ave. This street level monitor is will provide representative air quality data, with and without, the Croton Filtration Plant traffic activity factor.

Finally, a status update for both the On-Site and Off-Site air sampling equipment. The DEP has already given the go ahead to its contractors to order all of the required samplers. Purchase orders have been issued to the instrumentation manufacturers. Once

the instruments arrive they will be brought to the DEP Air Laboratory for checkout and calibration, and then they will be installed in the field

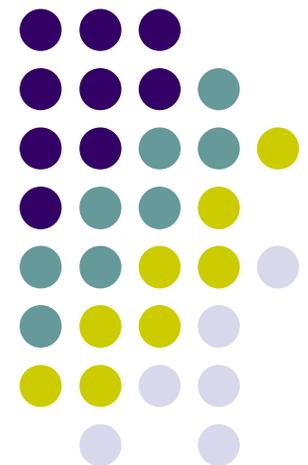


PROPOSED AIR QUALITY MONITORING DURING CONSTRUCTION OF THE  
CROTON WATER TREATMENT PLANT AT MOSHOLU GOLF COURSE

# Emission Control Technology Options For the Croton On-Road Truck Fleet

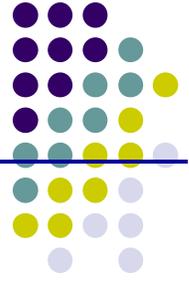
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Croton WTP  
Facilities Monitoring Committee Meeting  
September 15, 2005



# Presentation Overview

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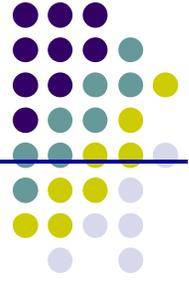


- I. Progress
- II. Overview of Available ECT for On-Road Applications
- III. Real World Constraints
- IV. ECT Options Analyzed for Croton
- V. ECT Baseline Option for Current Contract
- VI. Future Opportunities for Croton Contracts

# I.

# Progress

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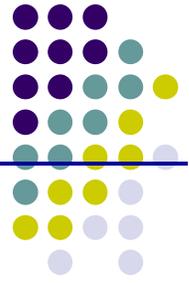


- Hired Emisstar to evaluate control technology for on-road vehicles.
- Met with two trucking firms.
- Met with Environmental Defense.

## II. Available ECT Options

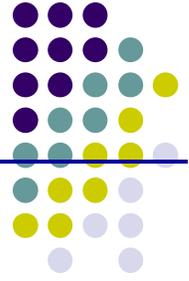
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PM Control

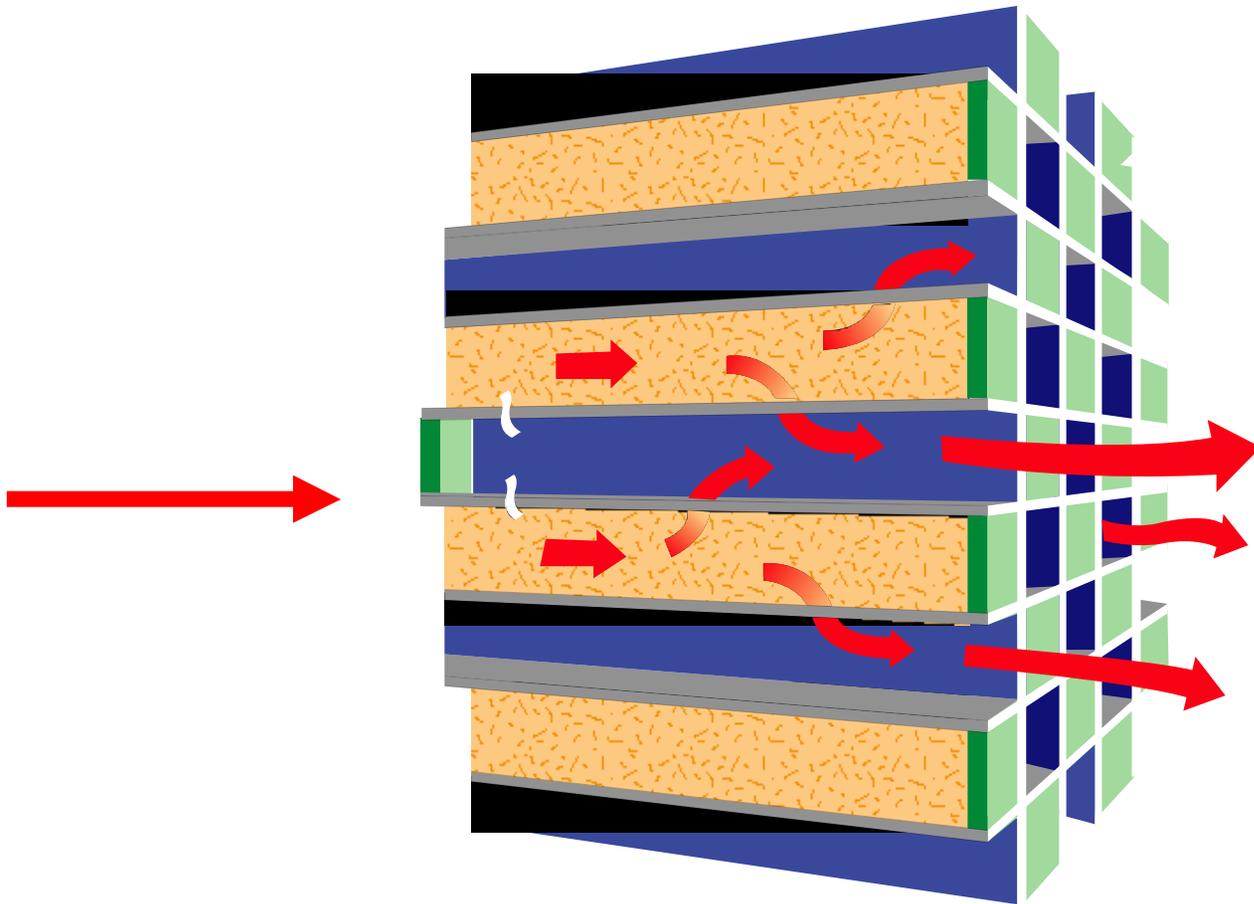


- Diesel Particulate Filters (DPF)
- Diesel Oxidation Catalysts (DOC)
- Catalyzed Wire Mesh Filters (CWMMF)
- Closed Crankcase Ventilation (CCV)
- Fuel Borne Catalysts (FBC)
- Ultra-Low Sulfur Diesel Fuel (ULSD)

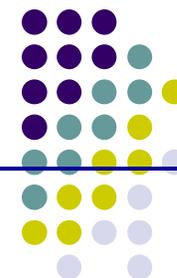
# DPF – Operating Principle



$O_2$  & *HEAT!*

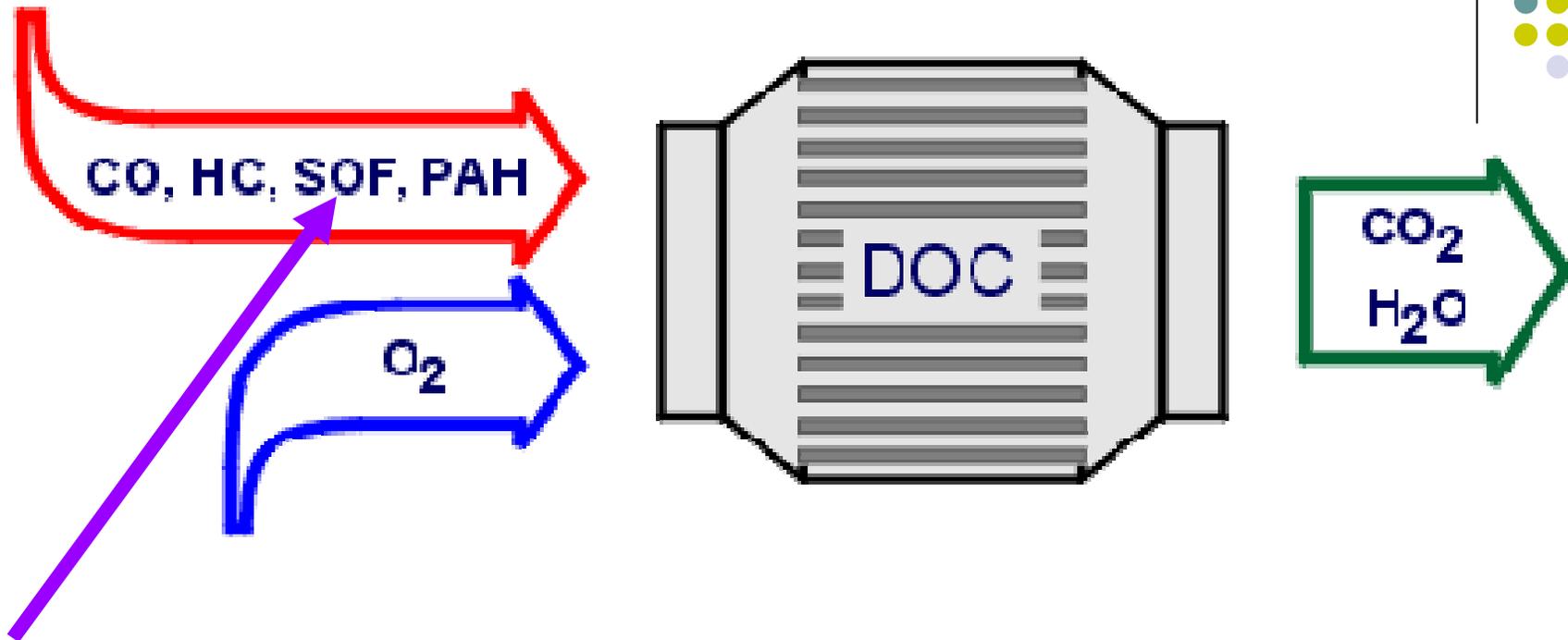


# DPF – At A Glance

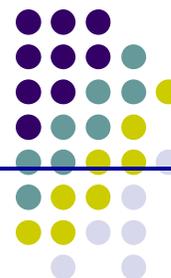


<b>Benefits</b>	<b>Drawbacks</b>
<ol style="list-style-type: none"><li>1. Very high total PM reduction performance.</li><li>2. Comparatively easy installation – not as straightforward as the DOC, but it still fits within the space formerly occupied by the muffler.</li><li>3. Passive regeneration is unnoticed by the vehicle operator.</li></ol>	<ol style="list-style-type: none"><li>1. High cost.</li><li>2. Requires ULSD.</li><li>3. Requires threshold exhaust temperature to ensure regeneration.</li><li>4. Requires periodic (usually yearly) removal and cleaning to remove unregenerated ash deposits.</li><li>5. Weight/”mounting”.</li></ol>

# DOC – Operating Principle

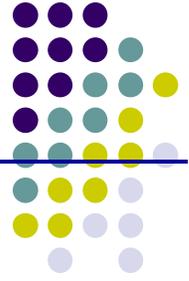


# DOC – At a Glance



<b>Benefits</b>	<b>Drawbacks</b>
<ol style="list-style-type: none"><li>1. Moderate total PM reduction performance (20-30%) – benefit if applied in high vehicle volumes.</li><li>2. Comparatively low cost.</li><li>3. Easy installation – usually direct replacement for muffler.</li><li>4. Tolerant of sulfur content in diesel fuel (not “poisoned”).</li><li>5. May provide high PM reduction on older engines, especially 2-cycle engines (both have higher SOF concentrations in diesel exhaust).</li></ol>	<ol style="list-style-type: none"><li>1. Low PM reduction efficiency – drawback if applied in low vehicle volumes.</li><li>2. Ineffective in reducing elemental carbon (i.e. “soot”).</li><li>3. Newer engines contain higher EC/OC undermining effectiveness.</li><li>4. Easy installation – but occasionally requires revised brackets to accommodate additional weight over muffler.</li><li>5. Potential for sulfate make.</li></ol>

# CWMF - Operating / At a glance

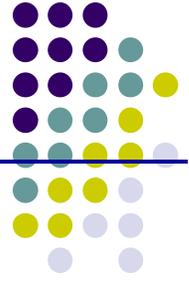


- “Halfway” between a DOC and DPF
- DOC does not affect particle motion
- DPF fully stops particles, then fully regenerates
- CWMF slows particles – some regeneration

<b>Benefits</b>	<b>Drawbacks</b>
<ol style="list-style-type: none"><li>1. Good PMreduction performance (50%).</li><li>2. Typically easy installation; not as heavy as DPF.</li><li>3. Not prone to plugging.</li><li>4. Does not require ULSD.</li><li>5. ARB Verified.</li></ol>	<ol style="list-style-type: none"><li>1. Higher cost than DOC.</li><li>2. Requires threshold exhaust temperature for regeneration (but not as much as DPF).</li></ol>

# CCV – Closed Crankcase Ventilation

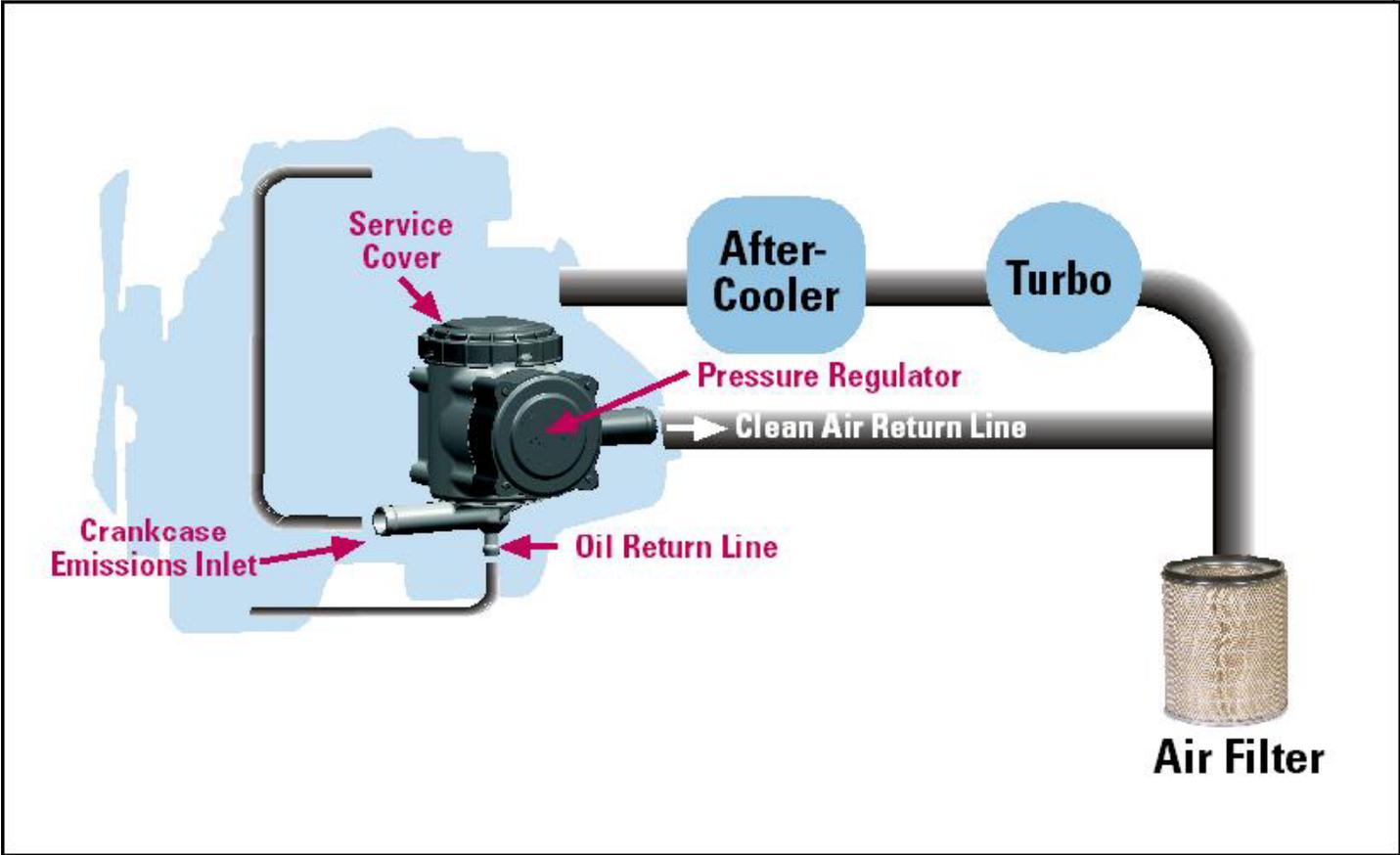
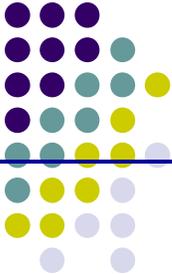
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Crankcase emissions are a by-product of diesel combustion.

- Certain percentage of engine exhaust gases pass by piston rings & valve seals into engine crankcase (oil sump and oil pan assembly) – “blow by” gases.
- Vent to atmosphere; can enter passenger compartment.
- CCV re-directs “blow-by” gases back into the engine for ‘re-combustion.’
- CCV system requires vapor separator, filtering and recirculation device to protect engine turbocharger.
- ‘07 On-Highway US EPA Regulation – “blow-by” gases cannot be vented into the atmosphere; CCV required.

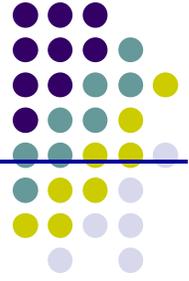
# CCV – Schematic



Donaldson Spiracle System

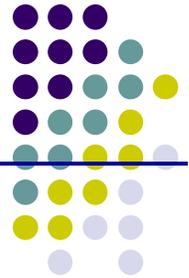
# FBC – At A Glance

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- Pre-combustion fuel dosing using additives
- Fungible – direct mixing with diesel fuel
- EPA Verified
- Promotes improved fuel economy (3-5%)
- Variety of formulations
  - Metal based, non-metal based.

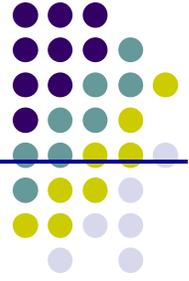
# ULSD – At A Glance



<b>Benefits</b>	<b>Drawbacks</b>
<ol style="list-style-type: none"><li>1. Enabler for advanced PM and NOx aftertreatment technologies.</li><li>2. Modest PM Reductions (3-5%).</li><li>3. Easy to implement<ol style="list-style-type: none"><li>a) “Fill &amp; go”.</li><li>b) No engine modifications.</li><li>c) Use existing fuel infrastructure.</li></ol></li><li>4. Mandated by Oct '06.</li><li>5. No performance degradation.</li></ol>	<ol style="list-style-type: none"><li>1. Incremental cost differential (over current sulfur-level diesel fuel).</li><li>2. Reduced lubricity (now solved w/additives).</li><li>3. Potential pipeline contamination with higher sulfur fuels (until mandated ULSD takes effect).</li></ol>

# III. Real World Constraints

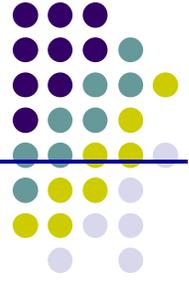
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- Operating
  - Decentralized fuel system (ULSD, LSD).
  - Indeterminate duty-cycle (variable Exhaust Gas Temperature (EGT)).
  - Robustness of engine maintenance.
  - Rotating Vehicle Inventory.
- Safety
  - DPF plugging / Filter cleaning.
  - Potential metal in FBC emissions issues.
  - CWMF temperature needs.

# Constraints..

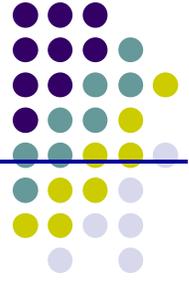
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- Installation
  - Space (CCV).
  - Weight (DPF, CWMF).
  - Exhaust backpressure monitor (DPF).
- Maintenance
  - Filter element replacement (CCV).
  - Ash deposition cleaning (DPF, CWMF).
  - Proper dosing concentration (FBC).
  - Fuel contamination (ULSD).

# Constraints...

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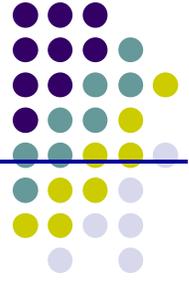


- Warranty

- No engine manufacturer is legally allowed to void warranty due to installation of aftermarket device.
- Engine warranty impacted only with definitive proof ECT caused failure.
- To our knowledge, none of the control technologies under analysis have resulted in warranty issues.

# IV. ECT Options Analyzed

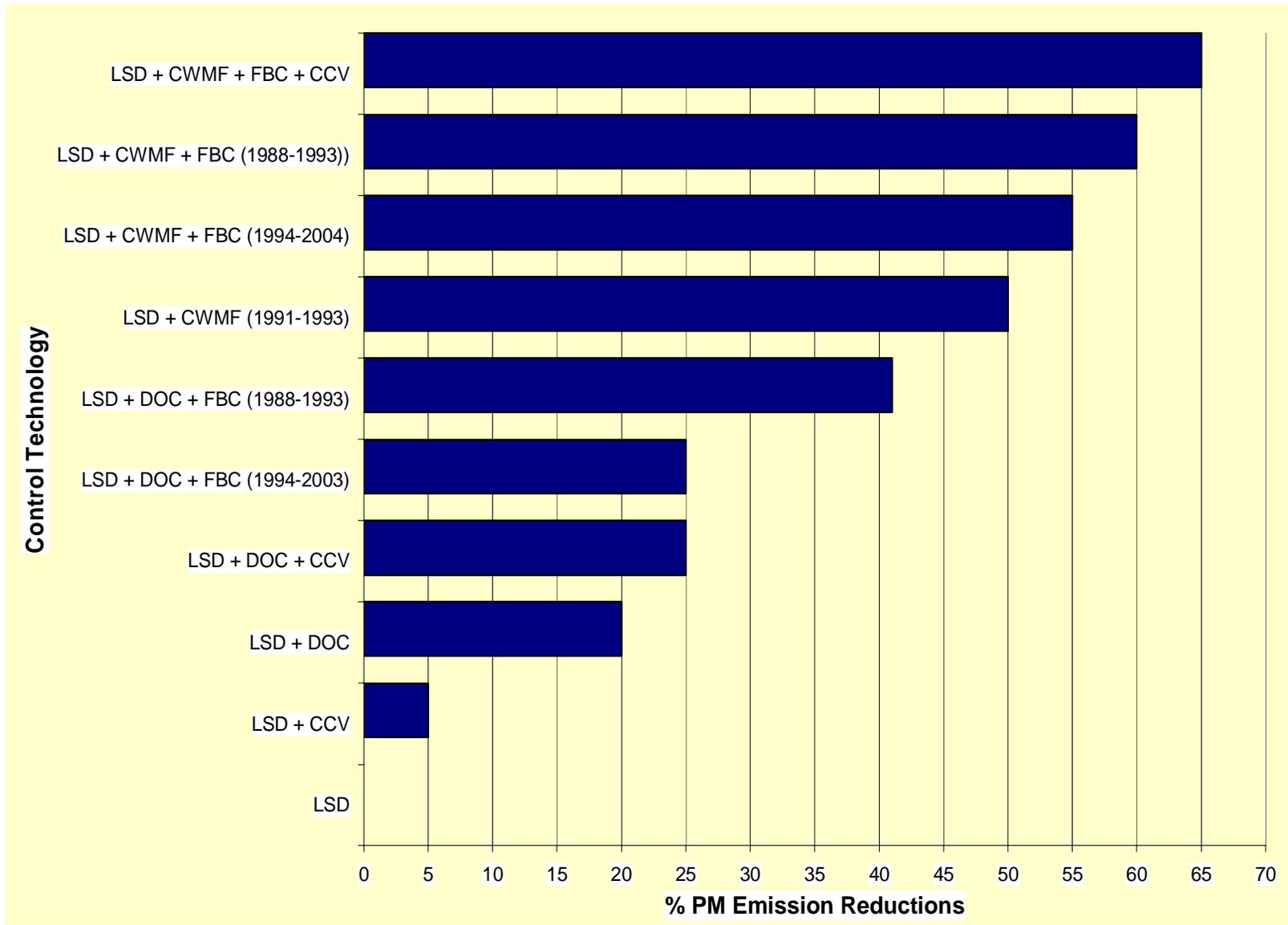
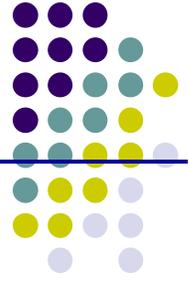
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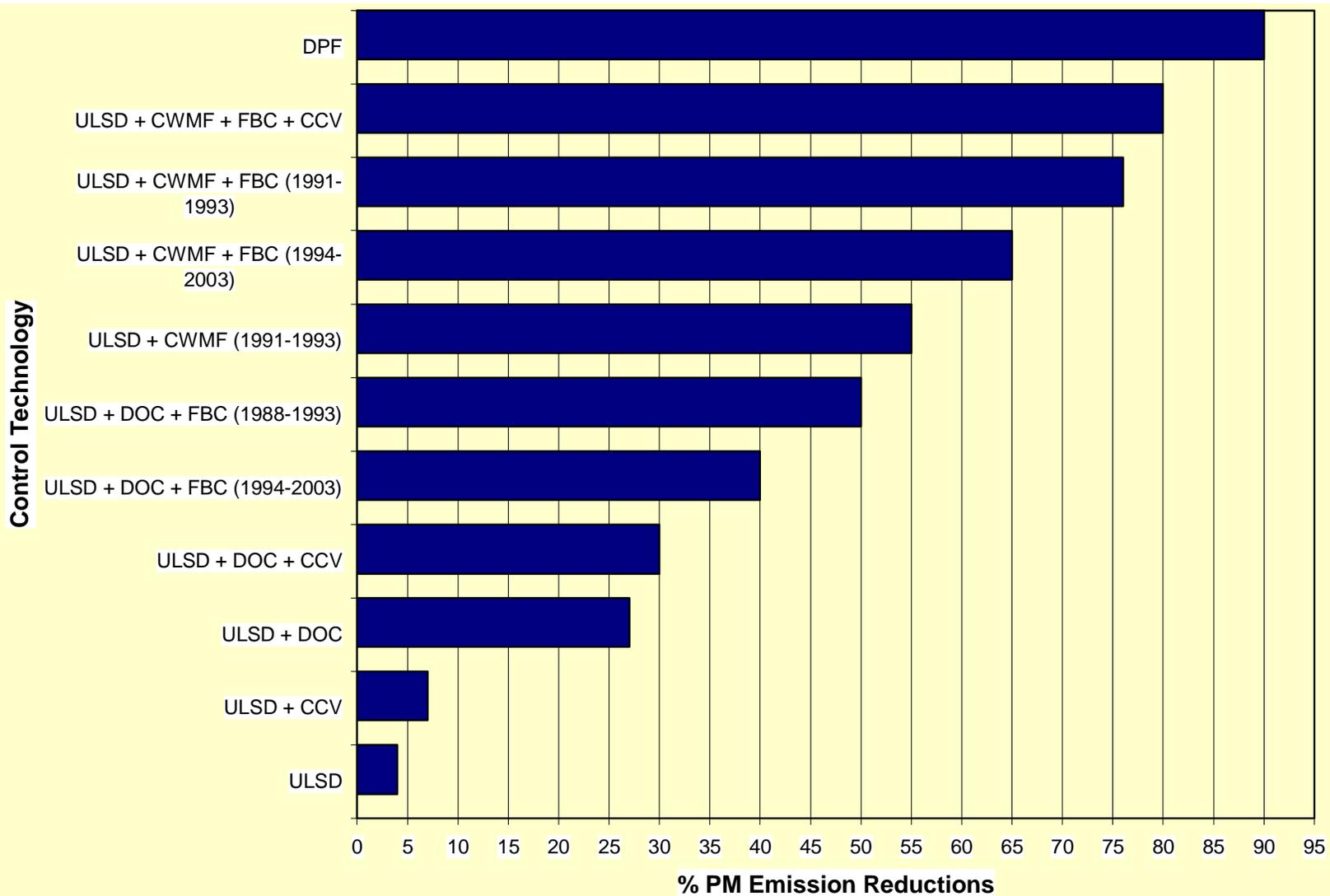
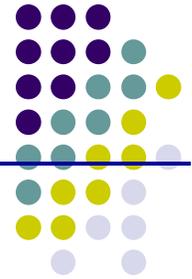
- Diesel Particulate Filters (DPF)
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- Closed Crankcase Ventilation (CCV)
- Fuel Borne Catalysts (FBC)
- Ultra-Low Sulfur Diesel Fuel (ULSD)

*Some of these can be paired together...*

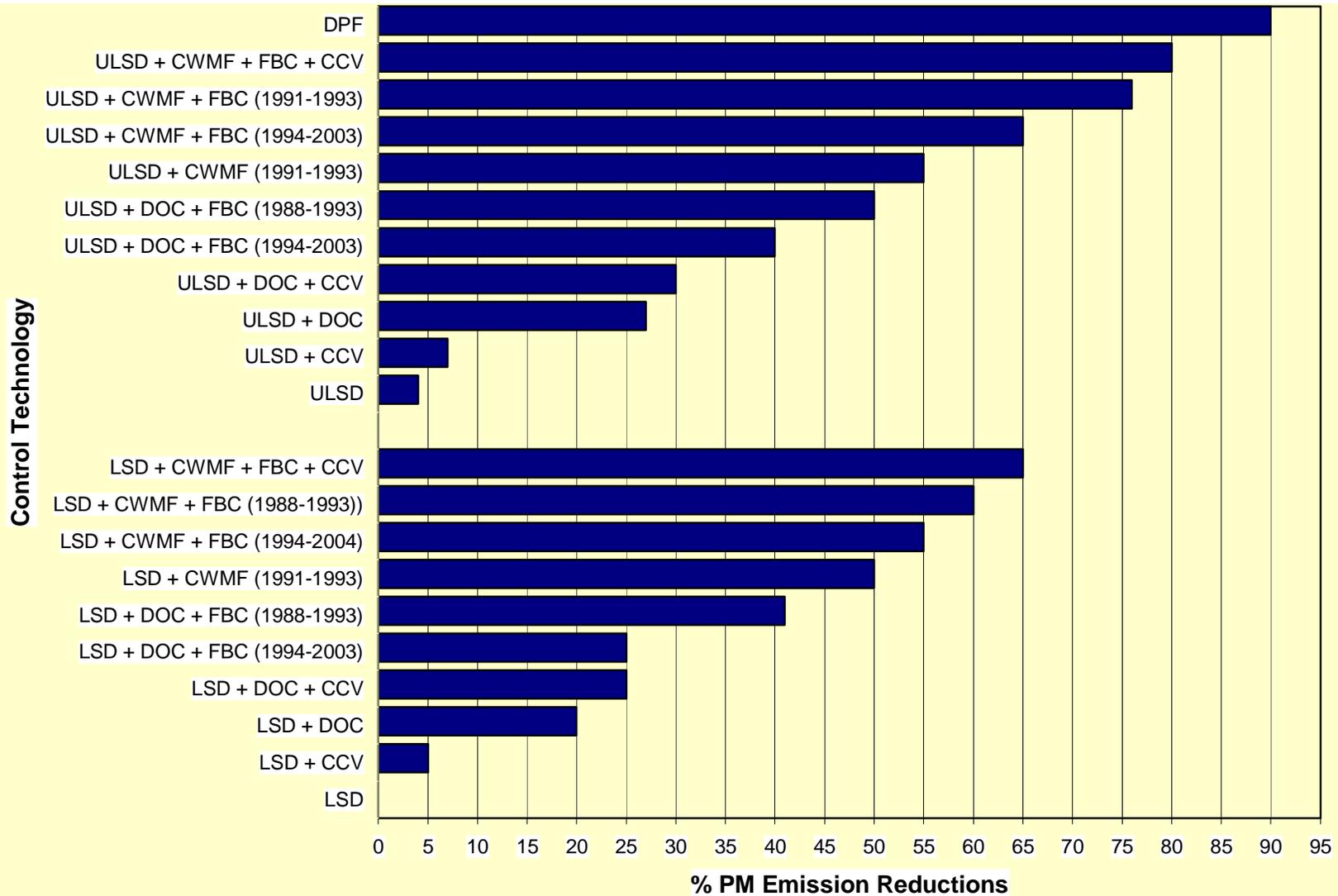
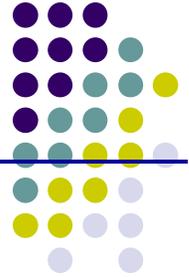
# Control Effectiveness – LSD



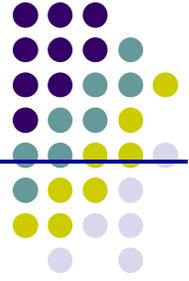
# Control Effectiveness – ULSD



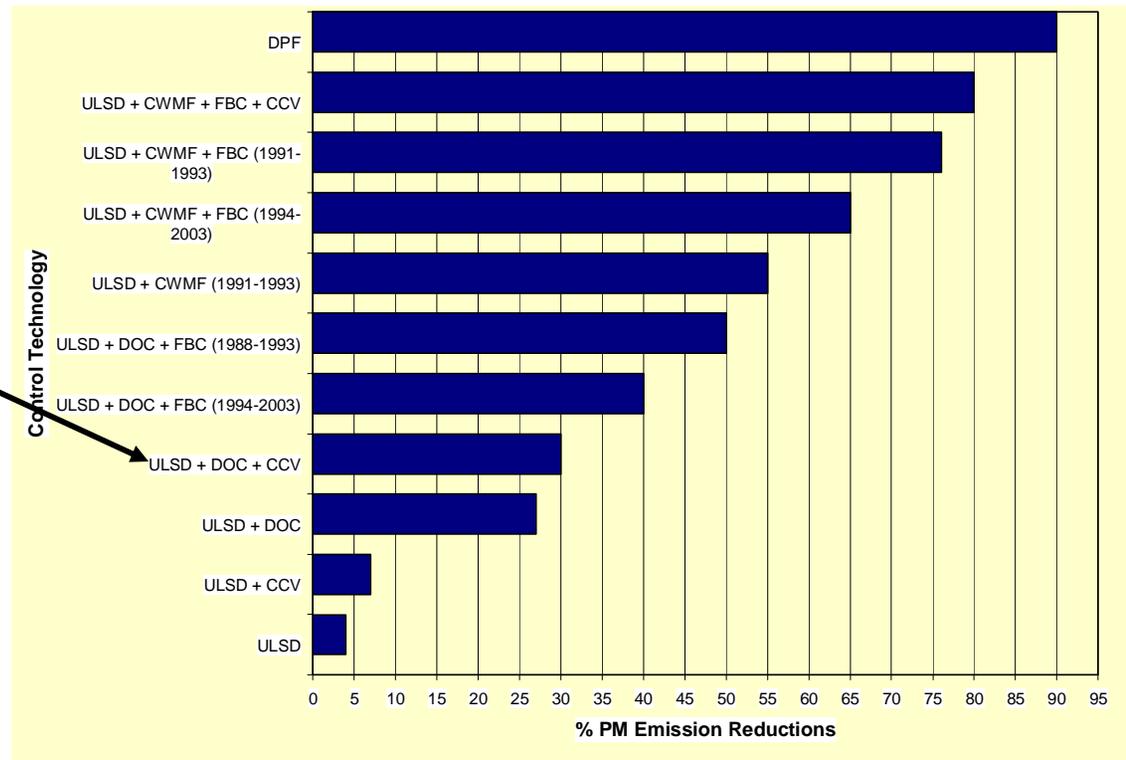
# LSD vs. ULSD Fuel Platforms



# V. ECT Option Selected

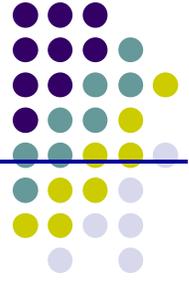


- ULSD
- DOC
- CCV



# Rationale / Benefits

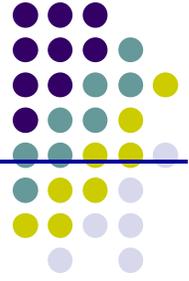
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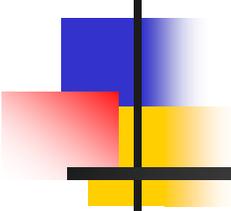
- Cost effective PM control
- Straight forward installation / direct muffler replacement
- Limited maintenance requirements (CCV only)
- Minimal factory lead time
- Meets Real World Constraints
  - EGT independent.
  - Fuel Platform independent.
  - Minimal safety issues.
  - No backpressure monitoring requirements.

## VI. Future Opportunities

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- Include provisions in future Croton contracts for the use of ULSD and BAT on on-road vehicles.
- Present current truckers with incentives and a “Menu of Options” to use DPFs or CWMFs, subject to operational constraints.



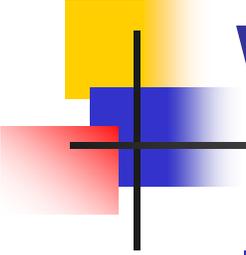
# Croton Water Filtration Facility Monitoring Committee

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Croton Water Filtration Facility Monitoring  
Committee

Daniel Kass

Deputy Director, Environmental Epidemiology  
NYC Department of Health and Mental Hygiene

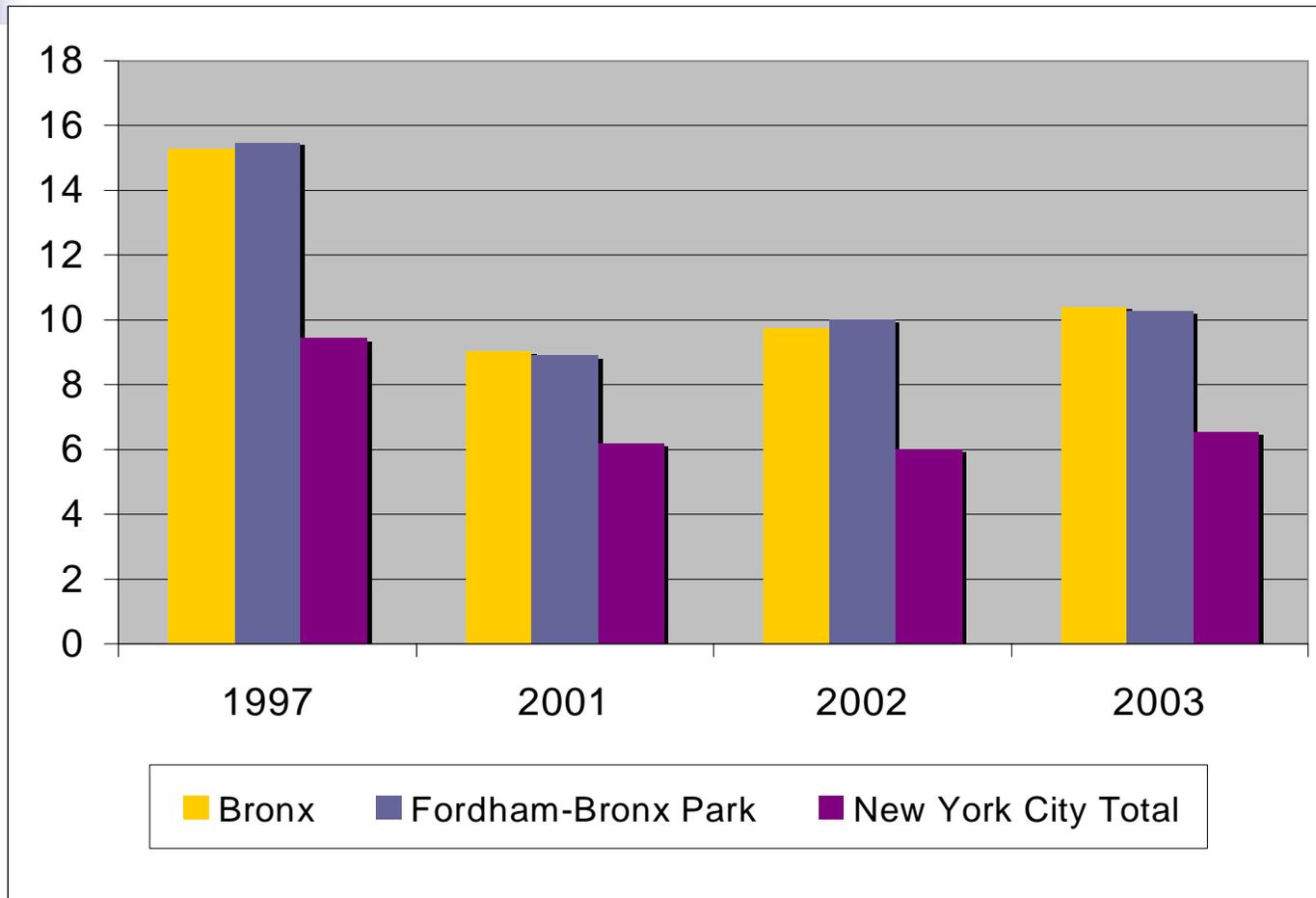


# What I'll Briefly Talk About

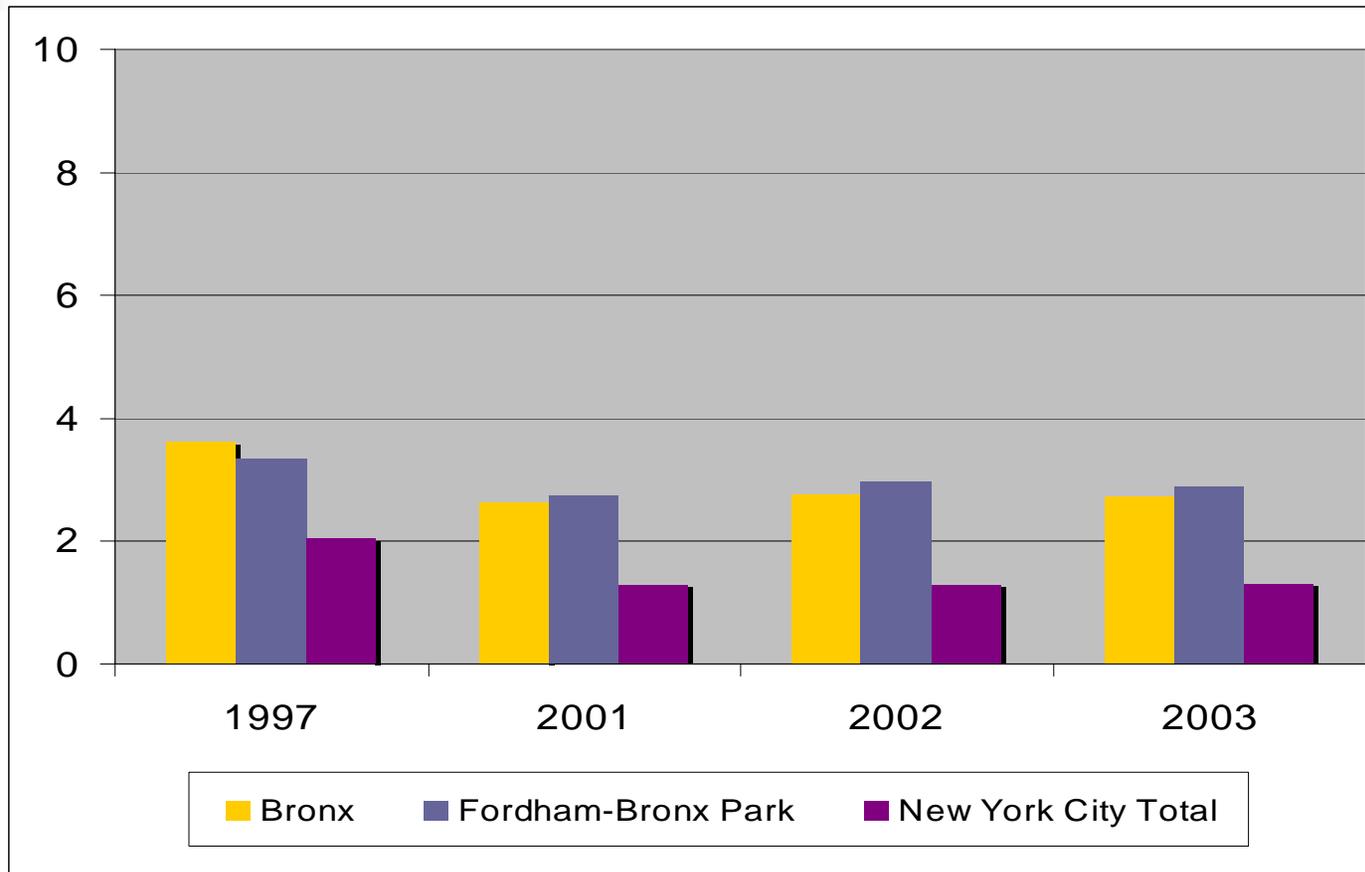
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- Asthma in the Community
- Air Quality and Health
- Studying the Impact of the Filtration Plant Construction
- Public Health Precautions

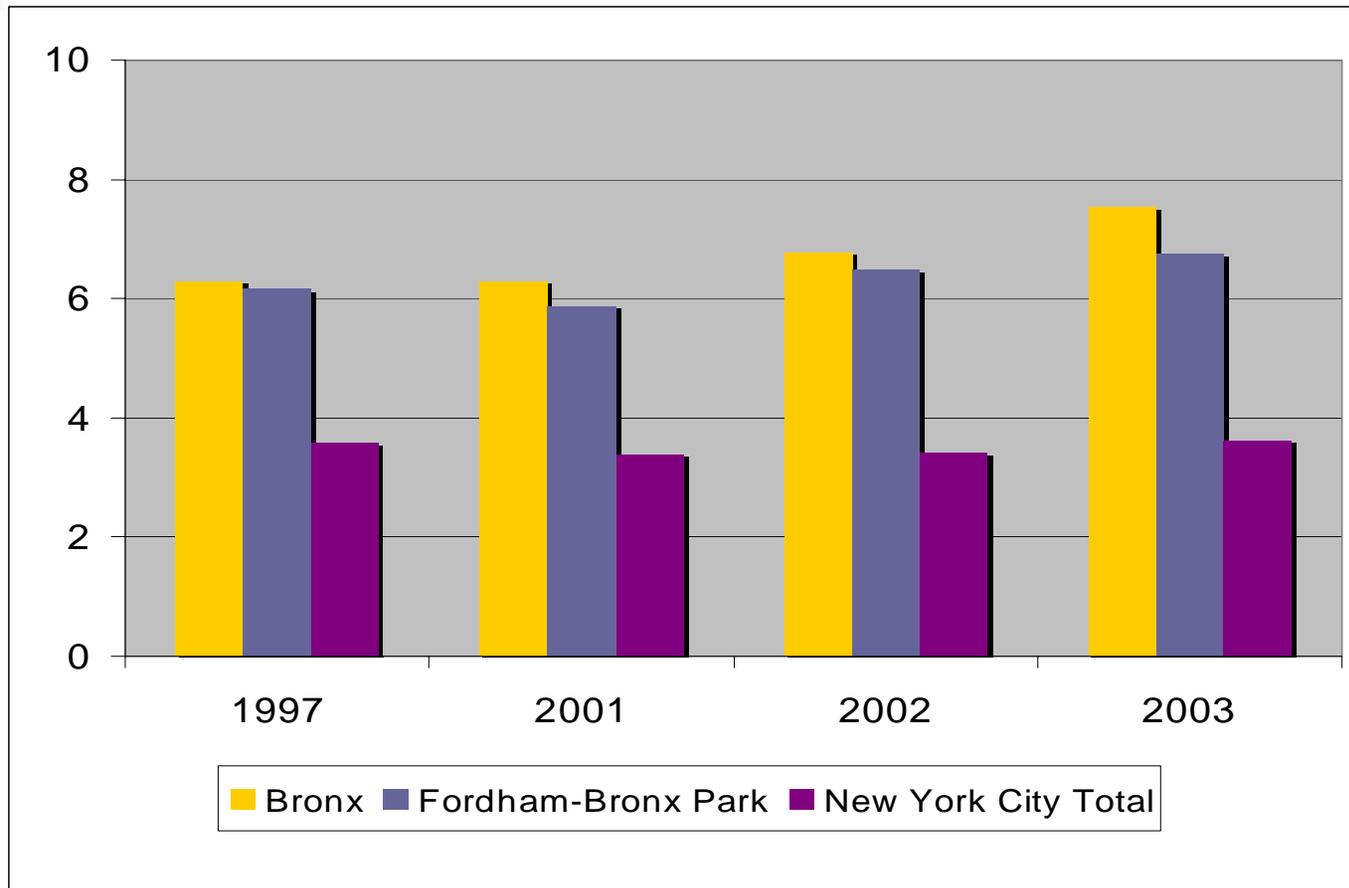
# Asthma Hospitalization Rates, Children 0-14

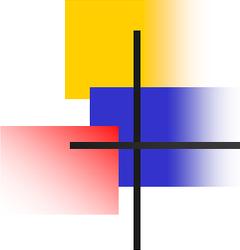


# Asthma Hospitalization Rates, Ages 15-34



# Asthma Hospitalization Rates, Adults 35 and Older

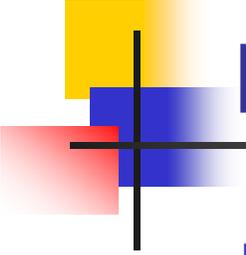




# Health Outcomes Associated With Daily Variation in Ambient PM 2.5.

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- Mortality (total, CVD, and respiratory)
- Increased hospital admissions for respiratory conditions including asthma and for CVD
- Myocardial infarction
- Increased emergency room visits (primarily the elderly and individuals with cardiopulmonary disease)
- Increased respiratory symptoms mostly in studies of children
- Decreased lung function (particularly in children and individuals with asthma)

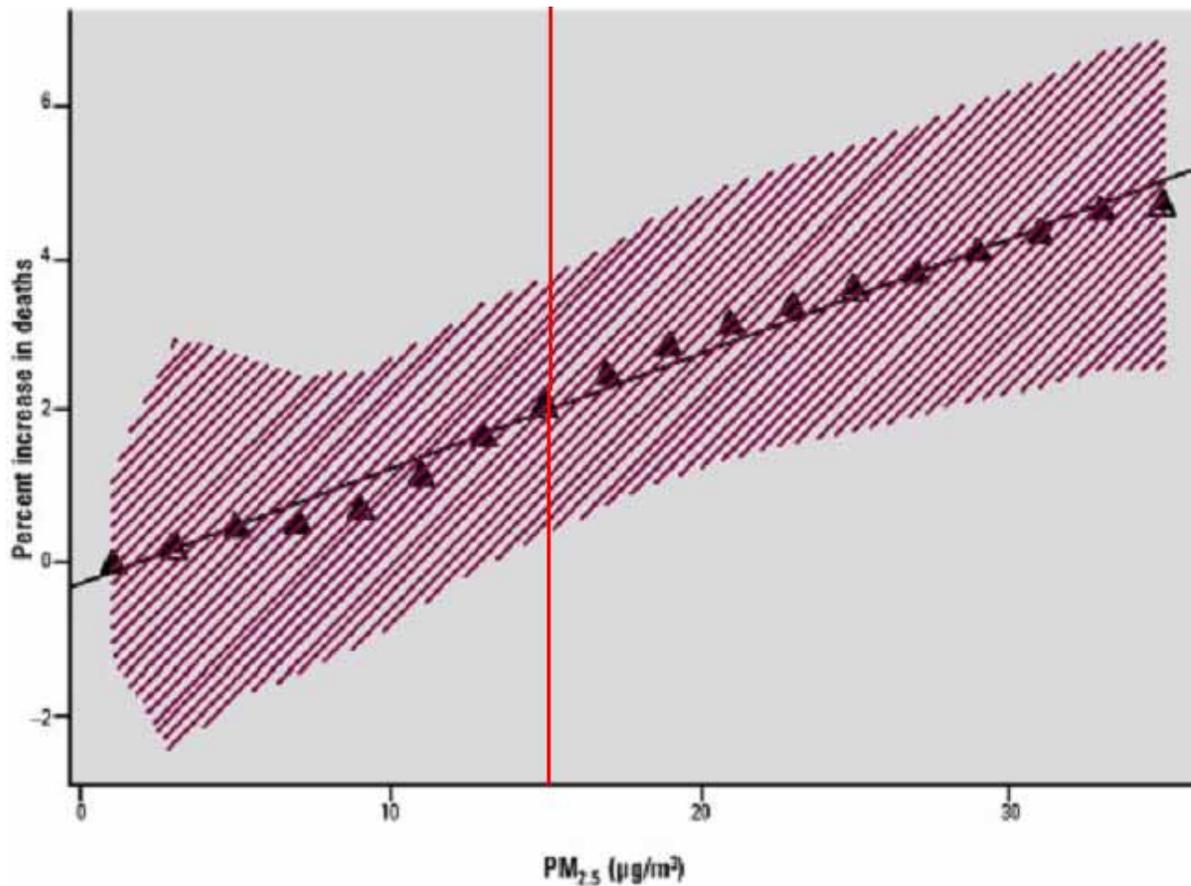


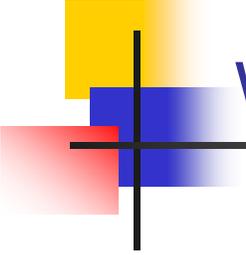
# Studies Consistently Find Modest, but Significant Risks (Examples)

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- **Congestive Heart Failure Hospitalizations** (Wellenius et al. 2005)
  - PM 10: 1.3% increase for each 10  $\mu\text{g}/\text{m}^3$  increase in PM10.
  - Carbon Monoxide: 8.4% increase for each 1 ppm increase in CO.
- **Daily Mortality** (Peel 2005, Schwartz 2005)
  - 0.2% increase in deaths for each 10  $\mu\text{g}/\text{m}^3$  in PM10
  - 0.9% increase in deaths per 10  $\mu\text{g}/\text{m}^3$  in PM2.5

# PM 2.5 Exposure-Outcome Relationship Continues Below NAAQS





# How Health Outcomes Associated with a Project Could be Studied

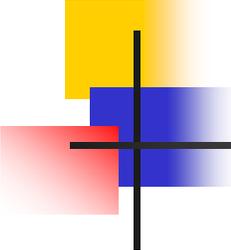
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## Hypothesis:

Are emergency room / hospitalization visits for heart disease, respiratory illnesses rising in association with the construction of the filtration plant?

## Methods:

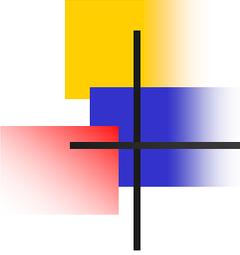
Evaluate association between daily emergency room visits and hospitalizations and air levels of CO and PM 2.5



# Limitations of This Approach

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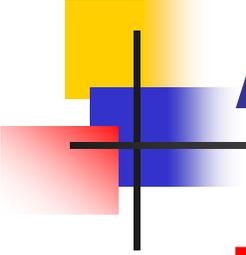
- Though daily and even weekly hospitalization numbers are numerous from a public health point of view, they are too few from a statistical point of view to evaluate over the short-term. For example:
  - In 2003, <800 childhood hospitalizations for zip codes 10458, 10467, 10468 combined (about 2 per day).
  - Worst-case scenarios in EIS are for highly localized area, under worst conditions, maximum activity, and are transient.
  - Even under those circumstances, air pollution from activity drops off rapidly with distance from the site, as does population size affected.
  - Emergency room visit numbers are greater, but still too small to make observations except perhaps over quarter-years.



# Limitations of this Approach

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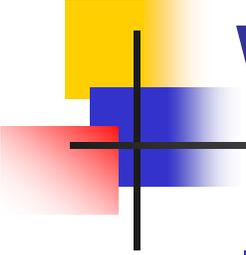
- Hospitalizations from asthma, cardiovascular diseases, and deaths are caused by many things.
- Even if a project is associated with elevations, there would need to be many events to be able to observe the association.
- Positive findings (showing an association), over the short-term are almost certainly unobservable.
- Negative study findings could only be interpreted as “not observing an effect”, but could not be interpreted as “no effect.”



# A Public Health Approach

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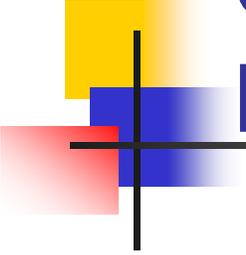
- From the perspective of protecting health, there are already too many people with severe asthma, and already too much heart disease
- A study will almost certainly not reveal elevations
- Should still do everything we can to reduce risks.



# What DOHMH Encourages

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- Adherence to committed work rules
- Actions to minimize CO, PM 10 and PM 2.5 emissions
- Monitoring of ambient air quality
- Corrective actions to respond to elevations



## Other Noteworthy Asthma Related Issues:

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In 2003 Fordham / Bronx Park area had among the highest rates in NYC for:

- Rodent Infestations:
  - 64% have rodents in their residential building
- Cockroach Infestations:
  - 57% have cockroaches in their home
- Household Use of Hazardous Pesticides:
  - 55% of households use sprays/bombs/foggers
- Household Use of Illegal Pesticides:
  - 11% use Tempo, an illegal pesticide.