Testimony of Paul Rush, P.E.
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New York City Department of Environmental Protection
(DEP)
before the Council of the City New York
Committee on Environmental Protection
concerning Introduction 911 - Testing for the Presence of Pharmaceuticals
and Personal Care Products

City Hall, October 27, 2009

Good morning, Chairman Gennaro and Members of the Committee. I am Paul Rush, Deputy Commissioner for Water Supply at DEP. On behalf of Acting Commissioner Steven Lawitts, thank you for the opportunity to speak to the Committee on Introduction 911 regarding testing for the presence of pharmaceuticals and personal care products (I will use the shorthand designation of 'pharmaceuticals' in my testimony) in the New York City drinking water supply. I am joined by Steven Schindler, Director of Water Quality for DEP.

In previous testimony I spoke about how disconcerting it is to the public to learn that even minute amounts of foreign substances have been found in drinking water across the United States, but that the compounds in question are present in amounts so small they are barely detectable using the most advanced scientific methods available. At such low levels, the United States Environmental Protection Agency (EPA) has affirmed there are no known health effects associated with the presence of trace amounts of pharmaceuticals in the water supply. To give you a sense of scale, based on the parts-per-trillion levels of pharmaceutical compounds detected in some water supply systems nationally, a person would have to drink one million

glasses of water to get the dose of even one over-the-counter ibuprofen tablet or the caffeine in one cup of coffee. Even at eight glasses of water per day, this would take the average person over 300 years to consume.

New York City tests its finished tap water – which is the term we use for water that is ready to be distributed for consumption – for approximately 240 chemical constituents, well above regulatory requirements. The City performs approximately 1,000 tests daily; 35,000 monthly; and 400,000 on an annual basis from up to 1,000 sampling locations throughout the City. Test results are reported to our regulators and are summarized in our annual report on the quality of New York City's drinking water.

The results of this extensive testing program confirm that New York City tap water meets the highest standards of quality and purity and is among the best in the world. And I want to discourage New Yorkers from unnecessarily pursuing expensive and environmentally less desirable bottled alternatives to the public drinking water supply. Just as a point of fact, bottled water is not subject to the same high level of regulatory scrutiny as public water supplies.

When I complete my statement, I will ask Steve Schindler to present to you what DEP has been doing since I last appeared before this Committee and place that work in the context of national efforts on the part of EPA, the scientific and research communities, and water utilities across the country. Our preliminary results indicate the presence at parts per trillion and less of a few compounds of emerging interest from a scientific and regulatory perspective. Going forward, we need to complete the final round of sampling, obtain a detailed expert review of the contract lab results, a

continued interaction between DEP and contract lab personnel to address quality assurance and quality control (QA /QC) issues, and additional scientific/QA review before publishing the complete results.

Our and others' efforts are directed at detecting the presence of compounds at extremely low levels. On the national level, detection is just the start of a long process of evaluation on the road to potential regulation of any one substance. As you know, EPA maintains an active program called the Contaminant Candidate List (CCL) to identify contaminants in public drinking water that warrant more detailed study. Though EPA considers hundreds of pharmaceuticals and personal care products for inclusion on the CCL, only a small number are included because most occur at levels far below the levels associated with any human health effects. In a four-year study of the health relevance of trace pharmaceuticals, using the highest concentrations found and the most conservative safety factors, Dr. Shane Snyder, the Research and Development Project Manager for the Southern Nevada Water Authority reported in a peer-reviewed paper on the subject that, "The bottom line conclusion is that the concentrations of pharmaceuticals we studied are orders of magnitude lower than would pose a public health threat."

Currently, EPA has drinking water regulations for more than 90 contaminants. The listing of contaminants on the Final CCL 3, published in September 2009, is only one step toward determining whether a compound warrants regulation as a threat to the water supply. After publishing the list, EPA must decide whether to regulate at least five contaminants from the list (called Regulatory Determinations). EPA uses the CCL to prioritize research

and data collection efforts to inform the agency's decision on whether to regulate a specific contaminant. The presence of a compound in the CCL is not a determination that the compound is a credible threat or that it should be regulated as such.

The final CCL 3 includes 104 chemicals or chemical groups and 12 microbiological contaminants. The list includes chemicals used in commerce, pesticides, biological toxins, disinfection byproducts, and waterborne pathogens. The contaminants on the list are not regulated by existing national primary drinking water regulations, are known or anticipated to occur in public water systems, and may impact public health. EPA evaluated approximately 7,500 chemicals and microbes for the Final CCL 3.

Following CCL listing as required by the Safe Drinking Water Act, EPA then evaluates the contaminants for suitability for regulation according to three types of criteria: health effects, occurrence, and analytical methods. In other words, EPA must determine on the basis of the data it gathers whether the contaminant can be reasonably well detected, whether it occurs at particular levels and whether the levels at which it occurs has health effects. If the contaminant satisfies the criteria, EPA then, and only then, will proceed to regulate it.

It is important to note that the CCL alone does not impose any requirements on public water systems. Before regulating a contaminant, EPA would 1) publish a preliminary determination to regulate; 2) issue a final determination; 3) publish a proposed regulation; and 4) issue a final

regulation. Once a regulation is promulgated, public water systems typically have three years to come into compliance with a new regulation.

In a comprehensive paper, "State of Knowledge of Endocrine Disruptors and Pharmaceuticals in Drinking Water," published by the Water Research Foundation, the authors (Shane A. Snyder and Bret J. Vanderford of the Southern Nevada Water Authority; Jörg Drewes and Eric Dickenson of the Colorado School of Mines, Environmental Science and Engineering Division; and Erin M. Snyder, Gretchen M. Bruce and Richard C. Pleus of Intertox, Inc., Seattle, Washington) summarized the issue this way:

"Strong concerns voiced by members of the public and environmental groups have prompted proposals to set analytical detection limits as regulatory levels for the concentrations of pharmaceuticals and EDCs in wastewater, recycled/reuse water, and drinking water. While regulations might provide some level of comfort, this approach invites criticism for several reasons. First, analytical detection methods are improving at such a rapid rate that they are outpacing improvements in treatment technologies. Even if analytical costs are not a consideration, it is practically impossible to remove all EDCs and PPCPS in water to levels below achievable detection limits. Second, analytical detection limits have no relationship to health-based standards. As analytical methods continue to improve, it is likely that detection limits for EDCs and PPCPs will more frequently fall below levels that produce any known biological effect. Consequently, striving to achieve "complete" removal will necessitate the use of increasingly expensive treatment technologies with no appreciable health benefit. Ideally, drinking water and wastewater treatment goals should be set for concentrations of contaminants that are safe and can be achieved at reasonable costs."

While we are focusing on detection of pharmaceuticals in the water, we are mindful that it is also important to focus on preventing those pharmaceuticals from entering the water supply by personal disposal. Subsequent to the previous hearing, DEP prepared a notice that was published by the Catskill Watershed Corporation in its summer newsletter and in the Watershed Agricultural Council's e-newsletter, both published this past June. In that notice, DEP advised residents to protect the quality of both groundwater and surface water in the watershed by following the guidelines recommended by the federal government for the proper disposal of expired and unused prescription and over-the-counter medications, pets' drugs, vitamins, sunscreens, fragrances and other personal care products. These guidelines suggest the following:

- Take unused, unneeded or expired prescription drugs out of their original containers and throw them in the trash.
- Mix prescription drugs with an undesirable substance, like used coffee grounds or kitty litter, and put them in impermeable, nondescript containers such as empty cans or sealable bags, to further ensure that the drugs aren't misused.
- Flush prescription drugs down the toilet only if the label or accompanying patient information specifically instructs doing so."

With respect to non-human impacts, I can report that studies have found that, in some areas, the pharmaceuticals found in wastewater treatment plant effluent may affect the health of fish and other aquatic organisms that live in receiving waters. Here, too, the risks posed to aquatic organisms are

unknown, largely because the concentrations in receiving waters are so low – significantly lower than concentrations observed in treated wastewater effluents. While the major concerns have been resistance to antibiotics and disruption of aquatic endocrine systems (the system of glands that produces hormones that regulate an organism's metabolic activity) by natural and synthetic steroids, many other pharmaceuticals have unknown consequences. More research is needed to draw any conclusions about the ecological impacts of pharmaceuticals and any role they may have in potential human health effects. I will say more about this when I discuss the provisions of Intro. 911.

In previous testimony I reported to you that one paper (Phillips et al., February 2005) based on New York State data suggests that conventional wastewater treatment plant processes are effective in removing significant amounts of these compounds. It also found that more research is required to more conclusively establish the fate of pharmaceuticals as they are subjected to different types of treatment. At this point it is far too early for DEP to make any predictions about the long-term need for any particular treatment technology as a response to the presence of pharmaceuticals. After we conclude our pilot and submit the published results for scientific peer review, we will decide on our next steps.

I would now like to address some of the provisions of Intro. 911. As we read it, the bill calls for testing for PPCPs without any limitation or specification. The category "PPCPs" is so large and the testing so costly that any sampling program has to be focused on a feasible and financially manageable list of representative compounds.

Second, the phrase, "drinking water treatment plants serving the city in the city's watersheds" requires clarification. The only DEP-operated drinking water treatment plants per se in service in the watersheds are at Kensico Reservoir and New Croton Reservoir. If the phrase is meant to include wastewater treatment plants (WWTPs) in the city's watersheds, monitoring for approximately 100 compounds at 14 in-city WWTPs and at 106 upstate WWTPs in the watersheds would cost a minimum of $2.5 million per round of sampling.

The bill would require treatment of the drinking water supply to remove a contaminant listed on the CCL. As I testified earlier, the CCL is a list of contaminants in drinking water that EPA will evaluate in a multi-step process to determine whether there is a need to regulate them based on the risk of health effects, occurrence and analytic methods. EPA only decides to regulate a very small number of the compounds listed on the CCL. It would be an irresponsible use of funds to remove a contaminant from the water supply that may never be deemed in need of regulation. It also would be extremely difficult to establish a threshold target concentration for removal without detailed feasibility studies.

The provision on the aquatic life criteria is premature. The aquatic life criteria represent what used to be called the Ambient Water Quality Criteria. These were non-enforceable guidance, published in 1985 and before, dealing with levels of contaminants that represent acute or chronic risk to saltwater or freshwater aquatic organisms. The concept has been proposed to be expanded to include more subtle effects due, for example, to endocrine

disruption. At this point, it remains only a proposal and has not been adopted by EPA.

We expect that the aquatic life criteria will ultimately represent for receiving waters what the CCL represents for drinking water – a list of contaminants that require research into their potential effects on health. With regard to wastewater effluent and the receiving waters into which they are discharged, we know from work done by the Water Research Foundation and Water Environment Research Foundation that pharmaceuticals are present at the parts-per-trillion level. What EPA and the scientific community are looking for is the connection between levels of exposure and possible toxicity. Rather than invest in expensive treatments that may be of questionable value, we believe our actions going forward should be informed by the developing science in this area.

In closing, please be assured that New York City has consistently been ahead of the curve in watershed protection efforts. The City continues to closely monitor and track all research into this issue and will adopt and comply with any future federal or State mandates. In addition, through our subscriptions to the Water Research Foundation and the Water Environment Research Foundation we have supported approximately 57 research projects with a total value of over $16.5 million dollars focused on this critical issue. We plan to continue to support research into this important issue. Our water quality measures have always been consistent with state-of-the-science research, and, as more is known about this particular issue, we will continue to modify our policies and infrastructure accordingly.

That completes my statement. With the Chairman's permission, I would ask Steve Schindler to complete our testimony with a presentation on DEP's pilot program.

Comments of Olga V. Naidenko, Ph.D.
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Environmental Working Group

Before the
Committee on Environmental Protection
The New York City Council

Hearing on the testing by the Department of Environmental Protection for the presence of pharmaceuticals and personal care products in the NYC drinking water supply

Tuesday, October 27, 2009

Mr. Chairman and distinguished Members of the Committee: My name is Olga Naidenko, and I am a Senior Scientist at Environmental Working Group (EWG), a nonprofit research and advocacy organization based in Washington, DC; Ames, Iowa; and Oakland, California. We focus much of our research on potential health risks from chemical contamination of food, water, consumer products and the environment.

With this testimony, we express our strong support for the proposed law to amend the administrative code of the city of New York that would require testing by the Department of Environmental Protection for the presence of pharmaceuticals and personal care products in the New York City drinking water supply and the effluent from wastewater treatment plants. We commend the Council for considering this important measure that will serve as an essential step toward protecting public health from potential adverse effects of life-long, cumulative exposure to mixtures of multiple pharmaceuticals and endocrine disrupting chemicals in drinking water.

The presence of hundreds of unregulated pharmaceuticals and other synthetic chemicals in the nation's surface, ground, waste and drinking water has been documented in studies done by the U.S. Geological Survey, U.S. Environmental Protection Agency (U.S. EPA) and water utilities. Research demonstrates that although individual pharmaceuticals occur at relatively low levels, conventional wastewater treatment does not effectively remove them. This is cause for concern and a call for timely action.

Below, we highlight three key areas of concern around pharmaceuticals in drinking water:

- The full spectrum of pharmaceuticals and related contaminants in the New York City drinking water supply is currently unknown; this gap must be urgently addressed by systematic, long-term water quality monitoring;
- The results of the testing must be fully disclosed in order to maintain the public's confidence in the health and safety of their drinking water;
- The development of appropriate, economically feasible plans for the protection of drinking water and for ensuring the healthy survival of aquatic life requires a robust dataset on the occurrence of pharmaceutical contaminants in water sources.

Below we address these points in detail.

1. The full spectrum of pharmaceuticals and related contaminants in the New York City drinking water supply is currently unknown; this gap must be urgently addressed by annual water quality monitoring.

The Associated Press investigation ("AP Probe Finds Drugs in Drinking Water," March 9, 2008) brought to the attention of the public what the scientific literature has been documenting for a decade – our waters are polluted with a mixture of synthetic chemicals that have been designed to have powerful effects at very low concentrations. Of especial concern are human and veterinary medicines such as steroids, antibiotics, anti-depressants and hormones, which find their way into wastewater due to pharmaceuticals excreted by the body; disposal of unused drugs; farm fields treated with biosolids (sewage sludge); manure from animals fed antibiotics that is used as fertilizer; and industrial discharge from pharmaceutical manufacturing (AP (Associated Press) 2008).

There are no federal or state standards or monitoring requirements for the vast majority of these contaminants in drinking water or wastewater. While the health effects of these pharmaceuticals at therapeutic doses are relatively well-known, their ecological and public health impacts, especially their side effects and potential for synergism with other pollutants, remain to be addressed and cannot be dismissed (Jones 2003; Pringle 2008).

Some studies have suggested that for individual pharmaceuticals, a person would have to drink hundreds of gallons of water to get anywhere near a medical dose (Caldwell 2009; Snyder 2008). However, no study has so far addressed the cumulative human health risk posed by the mixtures of pharmaceuticals that we may ingest on a daily basis (Benotti M.J. 2009; Focazio 2008; Kingsbury 2008; Kolpin 2002). Meanwhile, according to the U.S. EPA, many drug classes of concern are found in the nation's water sources, including (U.S. EPA 2009b):

- Antibiotics and antimicrobials that may lead to the development of drug-resistant bacteria;
- Estrogenic steroids that may affect the reproductive system in wildlife and people;
- Antidepressants and calcium-channel blockers, which have been associated with effects on spawning in shellfish and "dramatic inhibition of sperm activity in certain aquatic organisms" (U.S. EPA 2009b);
- Antiepileptic drugs such as phenytoin, valproate, carbamazepine that may act as human neuroteratogens and trigger cell death in the developing brain, which leads to neurodegeneration.
- Genotoxic drugs that are primarily used at hospitals and have a high acute toxicity.

Scientists do not yet understand what impact all of these water pollutants will have on human and environmental health.

The presence of pharmaceuticals in the nation's waters highlights the challenges we face from severe flaws in the nation's current regulatory framework for water protection. The first step to address these challenges is to find out what pharmaceuticals and personal care products are actually found in the New York City drinking water supply. We strongly support the proposed law that would mandate annual

water quality monitoring for the presence of pharmaceuticals and personal care products in treated wastewater discharged from the city's wastewater treatment plants and in drinking water, including sampling at drinking water treatment plants serving the city, at monitoring wells for underground aquifers and at distribution sites of drinking water.

With this law, New York will be able to devise a science-based policy by collecting real data on the occurrence of pharmaceuticals in drinking water sources and developing the necessary information for any mitigation steps that may be needed to avoid the risks to people and the environment.

2. The results of the testing must be fully disclosed in order to maintain the public's confidence in the health and safety of their drinking water.

Up to now, New York City residents have been fortunate to enjoy some of the best drinking water in the world, well known for its purity and good taste. Yet, both water quality and public trust in the water that comes from the tap cannot be taken for granted. In addition to a pro-active testing program, protecting public confidence in the health and safety of drinking water requires transparency about the findings, particularly with respect to pharmaceutical contaminants that usually cannot be seen, tasted or smelled, yet may exert powerful effects on health. Infants and others who are vulnerable may be especially at risk from these involuntary exposures.

Members of the public do not want to wake up in the morning and read about anti-convulsive medication in their tap water. Hundreds of news stories around the country on pharmaceutical contaminants in drinking water clearly indicate the intense interest that all Americans feel about this issue. Snippets of data will not be sufficient to allay these concerns; instead, full disclosure is needed.

Drinking water utilities are supportive of this disclosure. The Association of Metropolitan Water Agencies, an organization of metropolitan drinking water suppliers had made the following statement in March 2008:

> "*Water utilities should take steps to keep their consumers informed of their efforts to monitor and remove pharmaceuticals from water sources. Just as water utilities need data to make informed decisions, we believe that consumers should have the information they need to make personal health decisions*" (Association of Metropolitan Water Agencies 2008).

Because utilities often do not disclose the presence of unregulated contaminants in tap water, and because there is no national, centralized source of information on tap water contamination, Environmental Working Group maintains a National Tap Water Quality database where people can find out what urban, industrial, or agricultural pollutants may be present in their drinking water (EWG 2005). The water quality testing data in our database have been obtained from records that state health and environmental departments obtain from drinking water utilities and include tests conducted by utilities for more than 44,000 communities nationwide. The drug residues in tap water join hundreds of other synthetic chemicals Americans are exposed to daily, as contaminants in food, water, air and in common consumer products.

Yet, we only have data on chemicals that are tested for by utilities. Only limited information is available about pharmaceuticals because very few tests are performed and even fewer are disclosed to the public. All of the pharmaceuticals reported in drinking water supplies are unregulated in treated tap water -- any level is legal. Not only have the U.S. EPA and the U.S. Food and Drug Administration failed to set standards for pharmaceuticals in water, but also they have failed to require mandatory testing for these chemicals. This situation needs to be remedied on the federal level (Association of Metropolitan Water Agencies 2008).

According to the research articles published on the subject, there is a large range of concentrations at which pharmaceuticals, personal care product chemicals and endocrine disrupting compounds are present in water; there is also significant variation in the combinations of chemicals that are found at specific locations. Arguments are sometimes made that pharmaceuticals in drinking water pose little human or environmental health risk because they get diluted over the entire water supply (Grumbles 2008). This may be true for the majority of people; yet, people are exposed not to generalized risks but to specific, local risks and this information must be provided to the public.

We strongly support the provision of the proposed law that would require the mayor to submit to the council an annual report on the results of water quality testing. We also urge the city to make these data publicly available via the Department of Environment Protection website. This degree of transparency is essential in order to maintain public confidence in the quality of drinking water.

3. The development of appropriate, economically feasible plans for the protection of the drinking water and for ensuring the survival and thriving of aquatic life requires a robust dataset on the occurrence of pharmaceutical contaminants in water sources.

The occurrence of pharmaceuticals in the nation's waters is a complex problem and requires a comprehensive multi-faceted response by policy makers, drinking water- and wastewater utilities, pharmaceutical industry, scientists and individual citizens. No individual group can solve the problem single-handedly. Moreover, they are all united by one common need: need for data.

Traditional wastewater systems are designed to treat microorganisms and nutrients, not pharmaceuticals and other synthetic compounds found in the studies across the country. Advanced treatments such as ozonation, granulated activated carbon, UV treatment and advance oxidation process can remove significant amounts of pharmaceuticals but are expensive (Benotti M. J. 2009; Gerrity 2009; Rossner 2009). Ozonation can remove many pharmaceuticals (Broseus 2009) but it is associated with the production of toxic byproducts (Stalter 2009). Activated carbon filtration and other absorbents may be a good alternative treatment (Rossner 2009), although the costs tend to be higher (Joss 2008).

To resolve these challenges, several water utilities in the US and a number of groups in Europe are actively involved in researching wastewater treatments that can remove pharmaceuticals (Gunnarsson 2009; Joss 2008; Radjenovic 2008; Southern Nevada Water Authority 2008). In order to make the treatment process as cost-effective as possible, we have to know what pharmaceuticals are most commonly found in water sources; which ones of them pose the greatest health risks; where they primarily released; how they are transported through the water supply; and what treatments are most

effective in removing individual contaminants. There is a great need for research on treatment technology upgrades that industrial dischargers, large urban dischargers such as hospitals and nursing homes, wastewater systems and drinking water utilities can use to remove drugs from water (Pringle 2008).

It is also important to look at the risks posed by pharmaceutical pollutants to the aquatic life and thus, indirectly, to people. Studies by the U.S. EPA and academic scientists found that pharmaceuticals and personal care product chemicals can and do accumulate in fish and other aquatic animals (Brooks 2005; Chu 2007; U.S. EPA 2009c). In a recently published study, EPA researchers detected a range of pollutants in fish: diphenylhydramine (antihistamine); norfluoxetine and sertraline (antidepressants); other pharmaceuticals as well as galaxolide and tonalide, synthetic fragrances frequently added to personal care products (Ramirez 2009). These studies were of sufficient concern to the EPA, prompting the Agency to embark on a national survey of pharmaceuticals in 150 randomly-selected urban river sites across the country (U.S. EPA 2009a).

We do not know what would be the human health outcome of cumulative exposure to pharmaceuticals in water and in fish for people who are active in recreational fishing, a common pastime for many people who live in New York City and its suburbs. Exposure to toxic levels of water contaminants that accumulate in fish is a well-recognized public health problem for pollutants such as polychlorinated biphenyls (PCBs) and mercury (Fitzgerald 2007)

In order to forestall any potential human health problems due to pharmaceuticals in fish, it would be highly desirable to monitor the potential effects of pharmaceutical pollution on aquatic life and to ensure that these contaminants would not pose an adverse impact on aquatic ecosystems (Batt 2008; Molander 2009; Swedish Foundation for Strategic Environmental Research (Mistra) 2009). Aquatic species often serve as sentinels for human health (Kostich 2008). For example, it would take a lot of estrogen to cause an acute health effect. In contrast, low-level, chronic exposure to estrogenic pollutants in water has been associated with health effects as severe as gender change, such as feminization of male fish (Caldwell 2008; Tyler 2009). Clearly, this is not the type of severe change that we would be willing to accept with respect to human health.

By ensuring that the levels of pharmaceutical pollutants are safe for aquatic life, we will make a significant investment in the protection of human health as well, a key decision that will be greatly appreciated by our own children.

Ultimately, we would need to capture as much pollution as we can at the source by implementing pollution prevention and protection of water supplies (American Water Works Association (AWWA) 2008; Association of Metropolitan Water Agencies 2008). The options may include environmentally friendly design of the waste stream, labeling of pharmaceuticals according to their proper disposal strategies, support for proper pharmaceutical disposal programs and treatment of significant point sources of pharmaceutical discharge into the wastewater (Association of Metropolitan Water Agencies 2008; Joss 2008; Pringle 2008; Snyder 2008). These programs should be implemented in parallel with water quality testing and development of additional treatment infrastructure at wastewater plants.

We all know that bottled water is not a solution to concerns about pharmaceuticals in tap water: bottled water is much more expensive; it is drawn largely from the same sources as public tap water supplies; and it is associated with immense amounts of plastic waste (EWG 2008). Yet, for the public to not turn to bottled water, we need to focus on pollution prevention, data collection and disclosure and developing appropriate mitigation treatments.

Environmental Working Group congratulates the City Council for moving forward with this important legislation and we are glad to be of any assistance in accomplishing this task.

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NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

STATEMENT OF THE NATURAL RESOURCES DEFENSE COUNCIL BEFORE THE NEW YORK CITY COUNCIL'S ENVIRONMENTAL PROTECTION COMMITTEE, CONCERNING PHARMACEUTICALS IN DRINKING WATER.

OCTOBER 27, 2009

Good afternoon, Chairman Gennaro and members of the Committee. My name is Joshua Gray and I am a law student in the New York University Environmental Law Clinic at the Natural Resources Defense Council, Inc. ("NRDC"). As you know, NRDC is a national, non-profit legal and scientific organization with over 500,000 members and contributors around the nation. NRDC has focused, among its priority issues over the years, on protection of public drinking water supplies, both nationally and here in New York City. NRDC has devoted considerable attention to improving the quality of the nation's rivers and streams. I am pleased to be with you this afternoon to testify in favor of Intro No. 911 on behalf of NRDC.

As the Council has acknowledged, the presence of pharmaceuticals in New York City's drinking water merits the attention of the City government. A number of studies undertaken over recent years have revealed the existence of tiny amounts of pharmaceuticals—including a wide array of prescription drugs and over-the-counter medications—in the water supplies of a number of major metropolitan areas, including New York.[1] To be sure, the detected concentrations of such drugs and personal care products in drinking water supplies have been low.[2] Nonetheless, NRDC believes that pharmaceuticals in drinking water represent a small, but emerging, risk today to public health. This is not to say, however, that this contamination presents no risk at all.

Recent evidence suggests that pharmaceutical discharges may soon pose a risk to New York's marine ecology as well. Estrogen from pharmaceuticals and industrial detergents that break down into products that mimic the hormone estrogen can contribute to higher levels of estrogen-like materials in treatment plant effluent. These chemicals can build up in the sediments and affect development of marine life by depressing the male to female ratio, causing delayed development and reduced hatch and survival rates. Scientists are seeing this occur now with winter flounder in Jamaica Bay, with female to male rations observed as high as 10:1.[3]

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[1] Associated Press: Jeff Donn, Martha Mendoza and Justin Pritchard, "AP Probe Finds Drugs in Drinking Water," March 9, 2008; USGS: Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams (June 2002); USGS: Pharmaceuticals and other organic wastewater compounds in the Croton Watershed, New York, August 2000: P.J. Phillips, D.W. Kolpin, S.D. Zaugg, E.T. Furlong and L.B. Barber (August 2000).

[2] Journal of American Water Works Association, "Drug Residuals: How Xenobiotics Can Affect Water Supply Sources," May 2004.

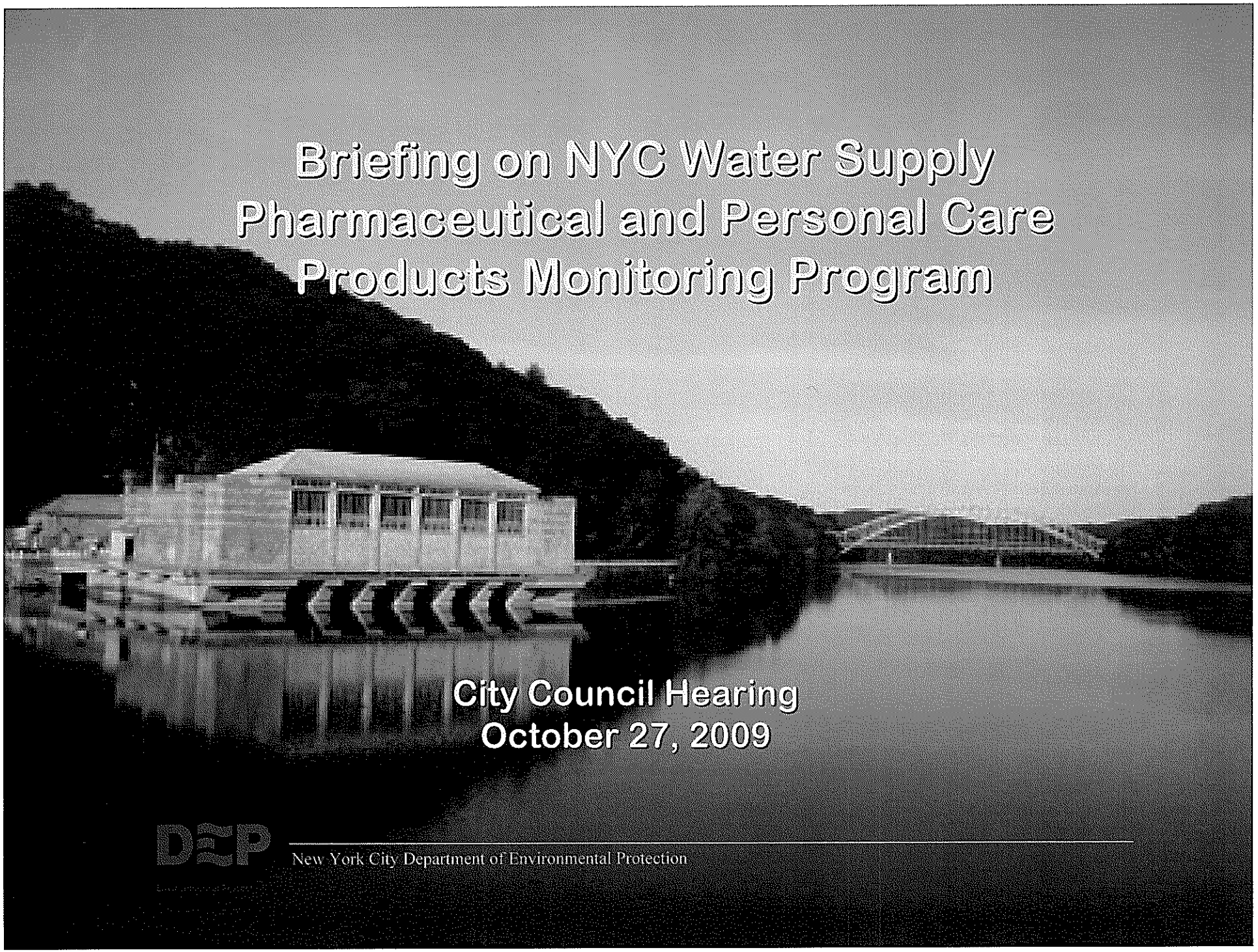
[3] Marine Sciences Research Center, Stony Brook University: Endocrine Disruptors in Jamaica Bay, May 2006: Anne McElroy, available at http://nbii-nin.ciesin.columbia.edu/jamaicabay/jbwppac/JBAC_McElroy_051506.pdf; Barbara A. Branca and Patrick Dooley, "Estrogenic Compounds in Urban Waterways: An Interview With Anne

NRDC believes that Intro No. 911, as proposed by the Council, is an admirable first step in confronting this emerging environmental and public health issue. This legislation mandates that New York City's Department of Environmental Protection establish and undertake a regular monitoring program to track the levels of trace pharmaceuticals in our drinking water supply. Through this monitoring, DEP will accurately report to the public on year-to-year trends in the presence and concentration of pharmaceuticals in New York's drinking water. In addition to its data collection and monitoring functions, this program will no doubt be vital to any future legislative or regulatory response that may be necessary.

NRDC supports this Bill because it provides a vital monitoring function without undue burden on finite City resources. Currently, New York City does not have current and reliable information as to the types and concentrations of pharmaceuticals in its drinking water supply. Through this legislation, DEP will be able, with its established and extensive pollution monitoring system, to carry out sensible program for regular testing of trace pharmaceuticals. As such, this Bill will accomplish its important goal, without spending unnecessary taxpayer dollars.

Accordingly, NRDC encourages the Committee to enact Intro No. 911 because it will provide a crucial first step in confronting the emerging environmental and public health problem of pharmaceuticals in New York City's drinking water. NRDC thanks the Committee for proposing this legislation, and Chairman Gennaro, for holding this important hearing. We look forward to assisting the Committee as it moves forward in any way we can. I am happy to pass on any questions or requests for further information to Eric Goldstein, the Senior Attorney at NRDC responsible for this issue.

McElroy," available at http://www.seagrant.sunysb.edu/Images/Uploads/PDFs/themeareas/Fisheries/SprSum06-Extrogenic%20Compounds%20in%20Urban%20Waterways.pdf.



Briefing on NYC Water Supply Pharmaceutical and Personal Care Products Monitoring Program

City Council Hearing
October 27, 2009

DEP

New York City Department of Environmental Protection

Introduction

- PPCP sources include wastewater, runoff from agricultural fields, urban runoff, air, and other sources.
- Not a new issue, but a result of advances in analytical capabilities.
- There are only a few contract laboratories with such demonstrated capabilities.

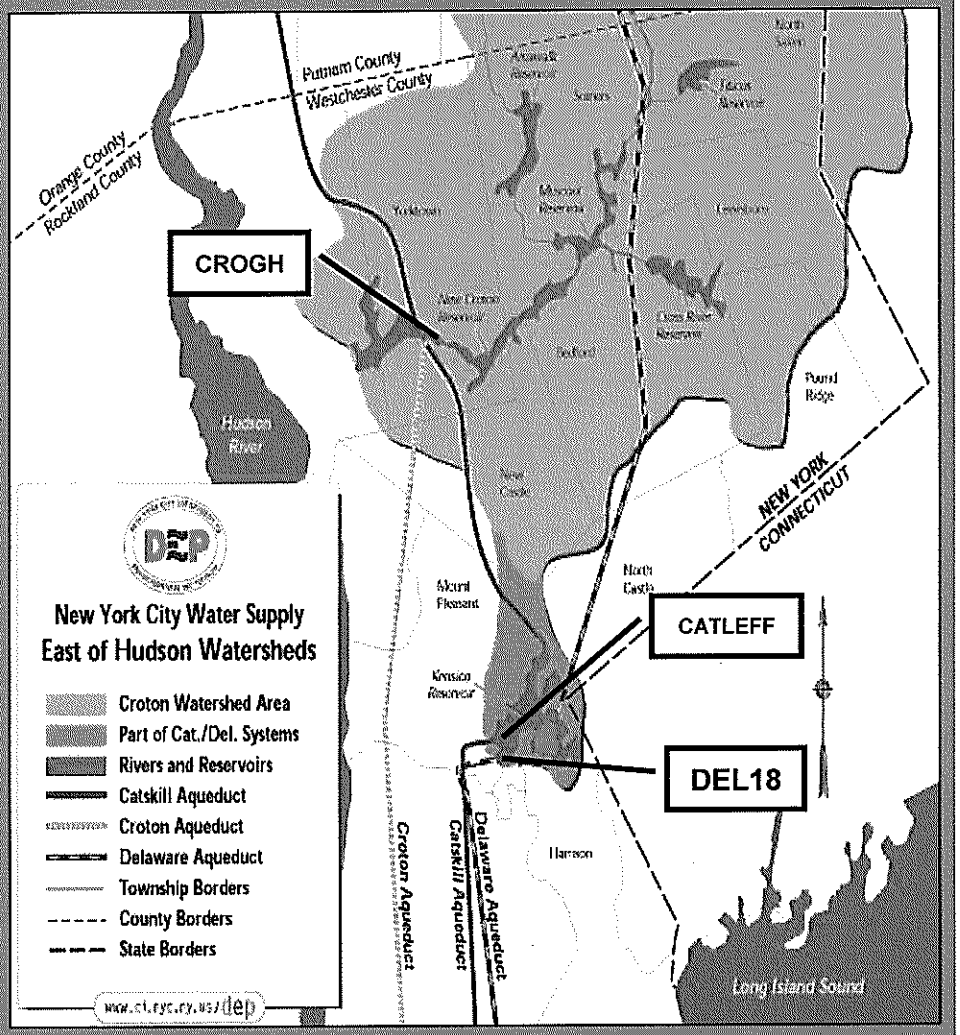
Approach

- Utilize two contract labs to perform analyses
- Samples collected quarterly at source water locations (pre-chlorination)
- High degree of field and laboratory QA/QC
- 10 samples analyzed per quarter
- USGS collects side by side samples for independent analysis

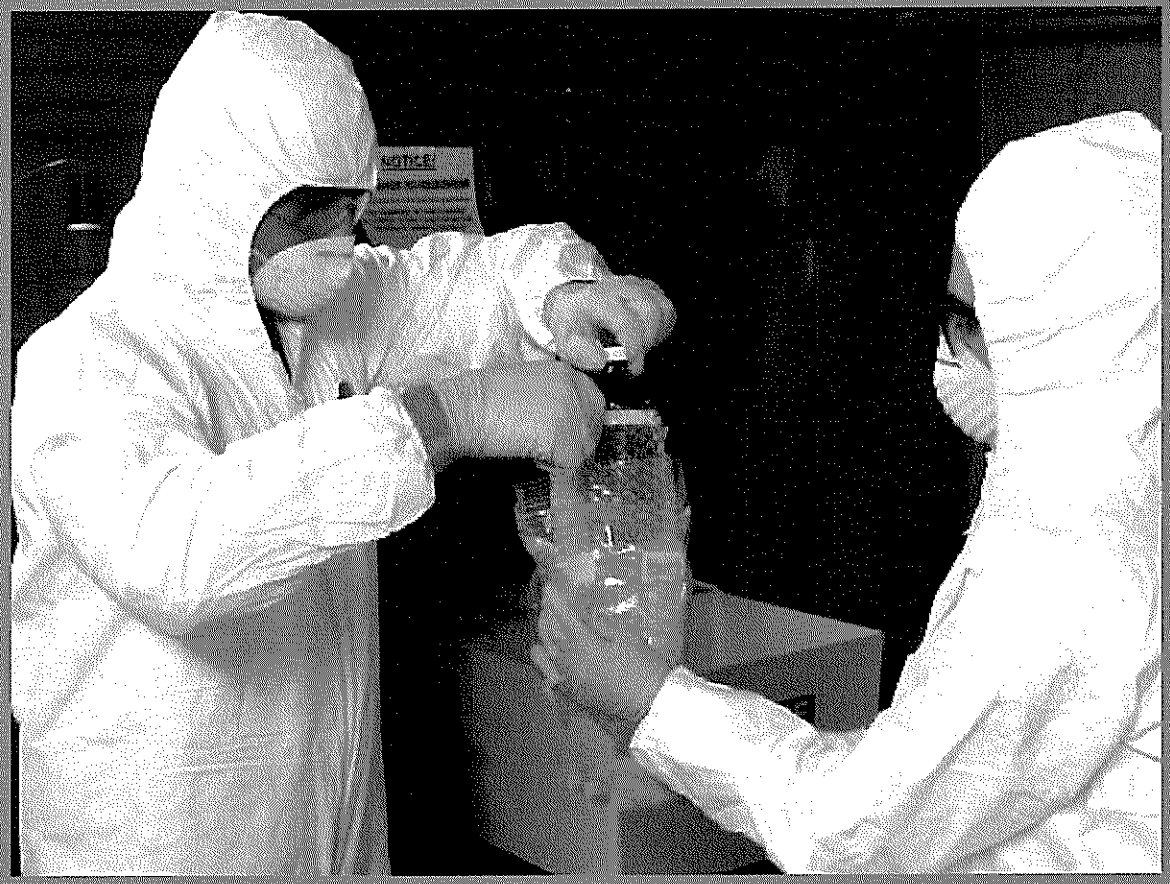
Approach (con't)

PPCP Monitoring Sites

Site Code	Site Description	Reason for Site Selection
CROGH	Croton Gatehouse, untreated effluent from New Croton Reservoir	Keypoint sampling location. Pre-chlorination.
DEL18	Delaware Aqueduct, Shaft 18 untreated effluent from Kensico Reservoir	
CATLEFF	Catskill Aqueduct, lower effluent chamber, untreated Kensico Reservoir effluent	

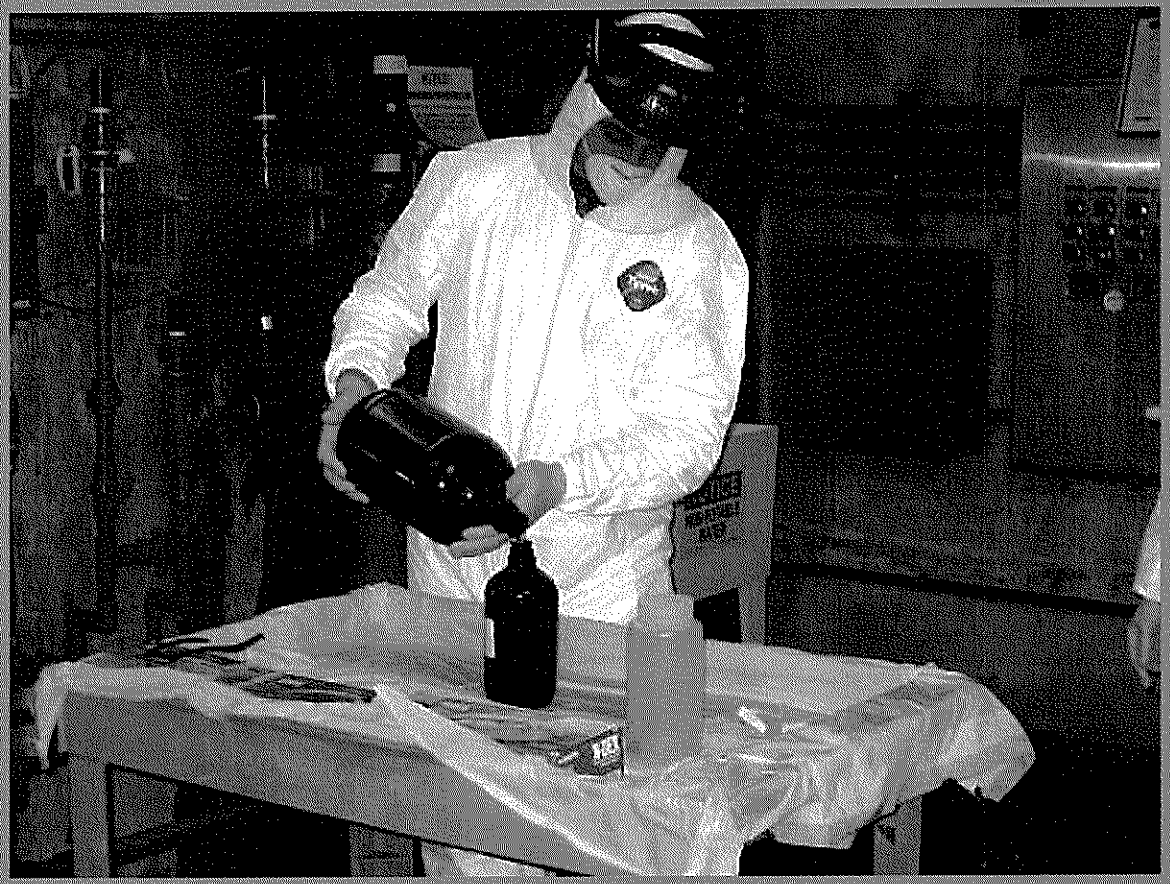


PPCP "clean hands" sampling technique



"Dirty hands" assisting "clean hands" in removing sample bottle from inner/outer bag.

PPCP "clean hands" sampling technique



"Clean hands" taking a field blank.

PPCP "clean hands" sampling technique

"Dirty hands" assisting "clean hands" with placing filled sample bottle back into inner/outer bag.

Field Quality Control

Samples collected

Location	Sample	Sample Dup	Trip Blank	Field Blank	LFM	LFMD
CROGH	X	X	X[&]	X[&]	X[&]	X[&]
DEL18	X	X				
CATLEFF	X	X				

&: Taken at alternating locations for each sampling event

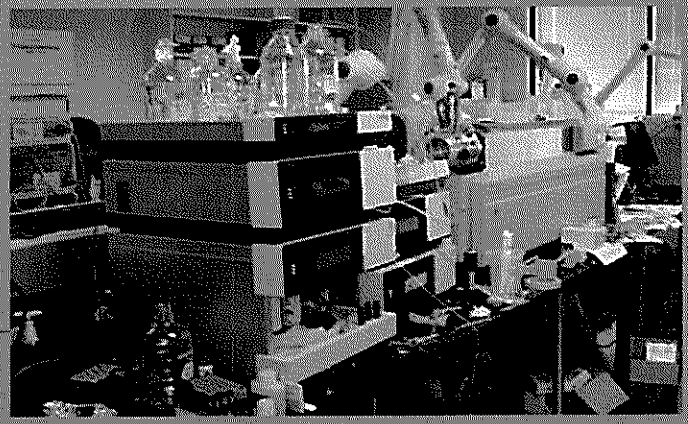
LFM – Laboratory Fortified Matrix

LFMD –Laboratory Fortified Matrix Duplicate

Laboratory QC

Test-Specific Controls:

- Blanks – negative controls
- Spikes - known amounts of target compounds added to sample
- Duplicates – replicate samples
- Internal standard – instrument performance
- Surrogate – sample prep performance



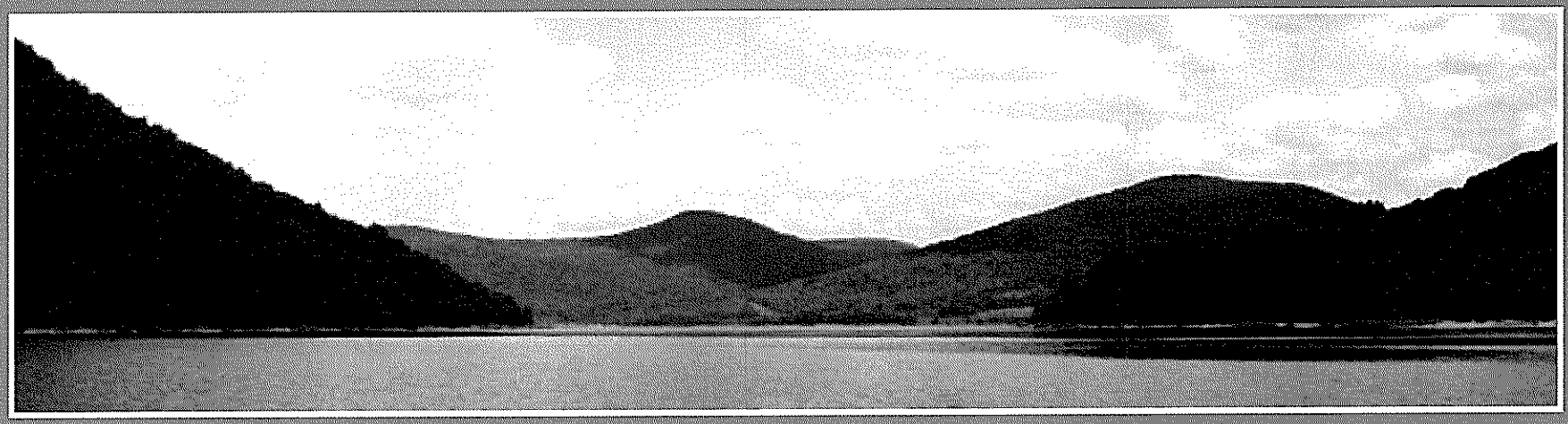
Laboratory QC Problems

Decreasing as labs get more experience, modify methods

Date	Number of QC problems	
	LAB A	LAB B
January-09	16	84
April-09	7	43
July-09	4	29

Conclusion

- Program appears to be providing credible results
  - Good agreement among duplicates
  - Few detects in blanks
  - Clean hands technique more time consuming but advisable to reduce cross-contamination as a possible source of error
  - Good agreement between laboratories
- Need additional scientific/QA review before publishing results



Thank You

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 10/27/2009

(PLEASE PRINT)

Name: Olga Naidenko

Address: 1436 Ust NW Suite 100 Washington DC

I represent: Environmental Working Group

Address: same as above

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THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 911 Res. No. _____

☒ in favor ☐ in opposition

Date: 10/27/09

(PLEASE PRINT)

Name: Joshua Gray

Address: 46 Manjer 1st #2 Brooklyn, NY 11206

I represent: Natural Resources Defense Council

Address: 40 W. 20th St. NY, NY 10011

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☐ in favor ☐ in opposition

Date: 10 27 09

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Name: Steven Schindler

Address: Director, Bureau of Water Supply

I represent: NYC DEP

Address: Deputy Comm. Paul V. Curtis 10-27-09

Please complete this card and return to the Sergeant-at-Arms

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(PLEASE PRINT)

Name: FAY MUIR

Address: 286 RESERVOIR PLACE

I represent: CROTON WATERSHED CLEAN WATER COALITION, INC

Address: _____

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☐ in favor ☐ in opposition

Date: 10 27 09

(PLEASE PRINT)

Name: Deputy Comm. Paul V. Rush, P.E.

Address: _____

I represent: NYCDEP, on behalf of NYCDEP

Address: _____

Please complete this card and return to the Sergeant-at-Arms